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Ronald Mac Gregor.

May 1931.

THE FIVE-YEAR PLAN OF
THE SOVIET UNION

THE
FIVE-YEAR PLAN
OF THE
SOVIET UNION

A Political Interpretation

BY

G. T. GRINKO

VICE-CHAIRMAN, STATE PLANNING COMMISSION
OF THE U.S.S.R.



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We, the Bolshevik Party, have convinced Russia. We have won Russia from the rich for the poor, from the exploiters for the toilers.

—V. I. LENIN, 1918.

We will solve this problem, no matter what the cost: that NEP Russia shall become Socialist Russia.

—V. I. LENIN, 1922.

We are going full steam ahead through industrialization toward Socialism, leaving behind the age-old Russian backwardness. We are becoming a land of metals, of automobiles and tractors; and when we put the U.S.S.R. into a motor-car and the muzhik into a tractor then let the revered capitalists who pride themselves on their "civilization" try to catch up with us. It is still to be seen which country will then have to be considered backward and which advanced.

—JOSEPH STALIN, 1929.

PUBLISHERS' NOTE

Gregory Theodore Grinko is one of the most prominent of the Soviet statesmen. His career has been largely in the Ukrainian Soviet Republic, where he was for a number of years People's Commissar for Education, and later head of the State Planning Commission of the Ukraine and Vice-Chairman of the Council of People's Commissars.

In these positions he became known as one of the leaders of economic and industrial planning in the U.S.S.R. and he was transferred to the State Planning Commission of the U.S.S.R. (Gosplan), as Vice-Chairman. Mr. Grinko took a leading part in the preparation of the Five-Year Plan for the industrial reconstruction of the Soviet Union, and was one of the authors of the four volume report in which it was presented. Mr. Grinko is now forty-three years of age.

The present translation was made from the Russian manuscript. The rapid progress of development under the Plan, however, has made it necessary to add certain new and revised figures. These, included in editorial footnotes, have been prepared from the official reports as presented in Soviet newspapers and periodicals.

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AUTHOR'S PREFACE

The basic facts of the socialist construction now taking place in the Soviet Union are presented in this book with sufficient care and clarity to obviate their particular mention in this preface.

Our concern has been to present the Five-Year Plan, which has been justly called a plan of gigantic construction and of a broad offensive of socialism, for the consideration of our foreign readers; and to picture the variety and scope of the problems which must be solved by it, as well as the difficulties which face the victorious construction of socialism in the Soviet Union. We have attempted to show not only the goal set by the Plan, but the actual processes by which it is being accomplished. In this connection the actual experiences of the already completed first year and the second, now in progress, are used.

The facts quoted here radically destroy the bourgeois legend that the Five-Year Plan is only an empty dream, and the pessimistic prophecies of the Right opportunist elements within the Communist movement. It is now plain that these latter are based on an exaggeration of the difficulties of socialist construction and an underestimation of the creative power of the victorious proletarian revolution.

The tremendous advance of socialist construction in the Soviet Union is surpassing all estimates under the Plan, and the most optimistic forecasts of its success. Already the experiences of the first year and a half under it have led to the abandonment of its minimal figures (the so-called initial or minimal variant). A second formulation has been adopted on the basis of the Plan's highest figures. The optimal or maximal variant is now the minimum Plan. The slogan: "Complete the Five-Year Plan in Four Years," is sounding more and more convincingly and energetically throughout the Soviet Union. It is becoming a concrete program which is mobilizing the creative urge and the will

of the masses of the proletariat and the poor and middle peasantry.

The revolutionary zeal of the masses sweeping towards socialist construction breaks all resistance and pushes aside those who oppose its progress.

Many of the figures quoted in this book will be out of date when they reach foreign readers. Many problems have already been shifted onto an entirely new base.

The mighty rush of the process of socialist construction raises new tasks of gigantic proportions. It is a sufficient example to point to the decisive transformation of the policy of keeping down the kulaks into the present policy of liquidating them as a class through the complete collectivization of the small and middle peasant economies.

But this must not mislead us. The fact that the actual advance of socialist construction in the Soviet Union outdistances the project, only emphasizes the revolutionary power which is contained in the Five-Year Plan, and the tremendous work of socialist construction.

We are fully conscious of the faults and shortcomings of this book. The demands of intensive construction do not leave time for careful literary treatment which such an all-embracing subject demands. We will, therefore, gratefully accept all criticism that may come from the friends of the Soviet Union. We consider it necessary to note that the basis of this book is the first volume of *The Five-Year Plan*, in the compilation of which the author participated, together with his numerous associates of the State Planning Commission (Gosplan).

G. T. GRINKO.

Moscow, 1930.

THE FIVE-YEAR PLAN OF THE SOVIET UNION

CHAPTER I

PLANNED ECONOMY AND PERSPECTIVE PLANNING IN THE U.S.S.R.

OUR analysis of the prospects of economic and cultural development in the U.S.S.R. requires a brief introduction to the general problems of planned economy and perspective planning in the Soviet Union. This is the more necessary because, although the Soviet political and economic system has already been in existence for twelve years in a territory embracing 150 million people and one-sixth of the earth's surface, a true understanding of it is far from being as widespread among foreign readers, even proletarian readers, as might be expected, considering the historical importance of the reconstruction taking place in the U.S.S.R. Still, there is an interest in these questions in Europe, America and the countries of the East—an interest that cannot be stemmed. The problems of a planned economic system agitate and profoundly interest the modern world on both sides of the Atlantic. It is not merely a theoretical interest. The revolutionary proletariat of the capitalist countries sees in the Soviet economic system, that is, in the system of a planned economy, the prototype of the economic structure to the establishment of which it must devote its efforts on the morrow after the victorious proletarian revolution. On the other hand, the more profound and farsighted minds among the bourgeoisie view with alarm the growing instability of the capitalist system as opposed to the successful unfolding of organized socialist economy; and they endeavor to discover in the Soviet economic

organization methods that might prevent, or at least retard, the decline of capitalist society. Unusually interesting in this respect is the admission of Professor Raymond T. Bye, of the University of Pennsylvania, who, after giving a detailed account of the Soviet system of planning and organization, declares:

This is a stupendous conception, which presents a real challenge to capitalism. If socialists can demonstrate the feasibility of a centrally planned and co-ordinated industrial system, we may well question whether capitalism must not find a way to incorporate this feature into its economy, if it is not to give way to socialism.*

This, coming from a bourgeois economist of the most powerful capitalist country, is a characteristic and almost tragic admission.

To see the only salvation for capitalism in methods borrowed from planned socialist economy—with what bitter irony these words of this American bourgeois economist must ring in the ears of those “singers” of capitalism who so zealously attempt to present the Soviet economic system to the civilized public of Europe and America as a product of barbarism, ignorance, Asiatic backwardness and despotism. But the attempt to incorporate the methods of organized and planned socialist economy into the economic system of capitalism is a futile venture; it is an attempt to combine incompatible elements based on mutually exclusive principles. Planned economy is as inherent to the socialist system as hopeless anarchy in production and merciless competition, whether among individual capitalists or among capitalist groups and states, are to capitalist society.

For, indeed, what are the essential prerequisites, the essential foundations on which the planned organization of Soviet economy develops in spite of colossal difficulties? They are as follows:

1. The establishment of the dictatorship of the proletariat; that is, the destruction of the bourgeois state machine from top to bottom and the concentration of state power in the hands of

* Raymond T. Bye, “Central Planning and Co-ordination of Production in Soviet Russia,” *American Economic Review*, Supplement, March, 1929, p. 92.—*Ed.*

the proletariat, which then becomes the organizer and leader of the national economy.

2. The nationalization of the land, factories, workshops, railroads, banks, etc., and the organization and systematic extension of the sphere of socialized production.

3. The monopoly of foreign trade and the strict regulation of economic relations with the capitalist economy of the world, with a view of bringing them fully into accord with the plan for the construction of the socialist economy.

4. Undeviating limitation and the final elimination of the capitalist, exploiting elements in the villages—the kulaks; * the widest scope of development for the small and middle or toiling individual peasants; the greatest possible stimulation of their productive efforts by the State; and at the same time systematic preparation of the conditions necessary for the progressive transformation of small and middle peasant husbandry into large-scale socialized agricultural production by means of wholesale collectivization, state farms, tractor and machinery stations, etc.

5. The essentially different attitude, as compared with capitalist society, of the Soviet economic system, and hence of the Soviet State in general, toward the proletariat, peasantry, national minorities, backward regions, etc.

6. The fact that the great masses of the proletariat, agricultural laborers and poor peasantry, and the bulk of the intellectuals are deeply and vitally interested in the success of the socialist economy and the resulting increasing self-activity of the people. This radically distinguishes the principle of Soviet economic construction from the economic processes taking place under conditions prevailing in antagonistic bourgeois society.

7. Finally, the ability peculiar to the Soviet system, to concentrate at any given moment, under the guidance of a single thought and will, on the most important sectors of the general line of economic construction virtually all the combined resources

* Literally "fist"; a wealthy peasant exploiting hired labor and acting as the village usurer; represents the remnant of capitalist and anti-Soviet element in the village.—*Ed.*

of the State, the monopolistic political party, the trade unions, the peasant organizations, the state trusts, syndicates, banks, the co-operatives, the press, schools, etc.

In order really to understand the very foundations of the planned organization of Soviet economy and not merely eclectically to select a few individual ways and methods which may allegedly correct the uneven and halting gait of the capitalist machine, it is necessary first of all to fully appreciate these determining social prerequisites of the Soviet economic system. It would, otherwise, be futile to describe the individual elements and links of this system, its forms of organization, its working mechanism, etc. The strength of the system is not in its technique, which is still inadequate, but in its social foundations which open a new epoch in the development of human society.

When a Western European or American observer, especially if he accepts the capitalist viewpoint, proceeds to study Soviet planned economy, his astonishment is immediately aroused by two factors. In the first place, it seems unthinkable to the bourgeois observer that it might be possible, by means of a system of economic planning and without the aid of private initiative, to foresee and regulate the manifold and complex elements which make up a great national economic whole. In the second place, not only bourgeois, but at times even proletarian observers completely fail to understand how in the Soviet economic régime methods can be found to determine and regulate in advance as part of the general economic plan, the production of individual peasant holdings.

The first group of doubts, or rather objections, is clearly expressed by the American economist, Stuart Chase, in an interesting article contributed to the *New York Times* (December 11, 1927) after his return from a visit to the Soviet Union in 1927. Appealing to the favorite arguments of the bourgeois public of America, Chase declares:

Sixteen men in Moscow to-day are attempting one of the most audacious economic experiments in history. As the presidium of the State Planning Commission, responsible to the Council of People's

Commissars and popularly known as the Gosplan, they are laying down the industrial future of 146,000,000 people and of one-sixth the land area of the world for fifteen years. They are making a careful and immensely detailed plan for a year in advance, a careful but less detailed plan for the next five years, and are blocking out the general economic development for the next fifteen years. . . .

It is an experiment so immense, so novel and so courageous that no student of economics can afford to neglect it. Whether it transcends the limits of human administrative capacity and fails, or whether it meets this challenge and succeeds, it has much to teach us. It is something new in the world.

Suppose you were asked to-morrow to take a train to Washington to sit at a desk in a Government bureau, to take pencil and paper and tell the railroads, the power companies, the steel mills, the coal mines, the oil fields, the Secretary of the Treasury, the banks, the wholesale houses, the farmers, the ship lines and the automobile factories how to order their capital investments and their raw materials, how to plan their production and distribution—for the next five years. One suspects that Henry Ford would quail before the order. For lesser mortals a journey to the moon would seem about as feasible. Yet here are men who have accepted the challenge in a larger, though less industrially complicated country.

The drafting of general plans for the national economy may appear equivalent to a flight to the moon to those who believe them to be the work of a handful of people; who do not understand the organizational connection between all the links of the economic system of the U.S.S.R.; and fail to see the guiding red thread of the planning principle and idea that runs through them all. The perspective plans of the U.S.S.R. are not the products of the creative efforts of the Gosplan [State Planning Commission] heroes and sages who have decided "to take up the challenge." They are developed as a result of the combined efforts of all the economic organizations: industries, trusts, syndicates, co-operatives, banks, the economic commissariats, the regional Soviets, etc., the activities of which, so far as planning is concerned, are directed and consolidated by the Gosplan of the U.S.S.R. Furthermore, the work of drawing up the great economic projects occupies the center of public attention as well as that of scientific institutions, trade unions and other public organizations. It is a social task, upon the solution of which,

under conditions admitting of no business or commercial secrets, the efforts of the whole country are concentrated. Let Mr. Chase consider the broad social, one might almost say, national scope of the work on the Five-Year Plan. It will then not appear so astonishing that, as he himself admits, our real accomplishment is not behind the plans.* The combined experience of scientific economic thought and of hundreds of thousands, and even millions, of practical workers in the field leaves no doubt of the successful development of the planning system.

The second group of doubts, which frequently exercises and agitates even foreign proletarian observers of the Soviet economic system, concerns the problems of individual peasant economy, the possibility of planning its development, and consequently of planning the economic development of the country as a whole. It is this particular sphere that has apparently puzzled many of the foreign observers and investigators with whom I have had opportunities of discussing this question. For, indeed, how is it possible to plan in advance for a year, not to speak of five years, the economic activities of 26 million small peasant holdings, including a great number of very small farms, each of which is a petty producer of marketable goods? Doubts of this kind deserve greater consideration than all others which are merely based on a general misconception of the nature of the Soviet economic planning system. We shall return to this phase of the question in the chapter devoted to agriculture. However, a few observations on the basic questions of methodology are in place here.

In the first place, each economic project of the Soviet Union embodied in the general plan of national economy is a synthesis of scientific prognostication on the one hand and economic planning on the other hand. Needless to say, this synthesis is based on the consideration of the purpose ahead, or on a teleological principle. While there is a great field for direct planning

* All indications are that the Five-Year Plan of economic development will be completed in four years and that in many branches of Soviet industry and particularly in agriculture the program will be surpassed during that period.—*Ed.*

and the assignment of definite tasks in the socialized sector of Soviet economy, in large scale industry, transportation and banking, much must still be done on the basis of scientific prognosis in atomized, and still extremely backward agriculture. This requires considerable caution and forethought. For it is backward agriculture, subject as it is to fluctuations of elemental forces, that presents the most serious dangers to the system of economic planning in the U.S.S.R. It should further be borne in mind that agricultural planning is supported by a century's experience and observation, which permits comparatively exact estimates of possible fluctuations. It is worth noting that the estimates of the provisional grain and fodder crops, prepared annually by a special government committee of experts, supply, as a rule, quite reliable data for this section of the general planning system. Finally, and this is really the determining factor, the Soviet State possesses such powerful levers, as the nationalization of the land, the resources of state industry, the budget, the credit system, and the policy of determining prices, which enable it to give the necessary direction to the course of agricultural production of the country. Furthermore, these levers are growing more powerful and accordingly make it possible also to predetermine the course of agricultural development as part of the general economic plan.

There can be no question that agriculture, consisting as it did, until the fall of 1929 when the collectivization movement began to gain momentum, of 26 million individual peasant holdings, represents the most difficult sector of the economic planning system of the U.S.S.R. It is this agricultural sector that in a large measure made the entire system of economic planning assume to a certain degree a provisional character serving the purposes of orientation only. But it would be erroneous to exaggerate these difficulties, for how can one fail to see that from year to year the scope of the planning system of the U.S.S.R. embraces more and more widely and firmly the whole national economy, including agricultural production? As indicated later, agriculture in the Soviet Union is undergoing a profound change;

within it has begun the process of socialization, the building up of mechanized state farms and peasant collective farms on a large scale. It is easy to see how greatly this process will increase the possibilities for planned forecast and control of agricultural production, and consequently of the national economy of the U.S.S.R. as a whole.

It is not our intention here, however, to represent the planning work and the planning system of the U.S.S.R. as finally conquered positions of the socialist economy. On the contrary, literally from the first days of the Soviet Government there has been going on an intense and difficult struggle for the planning principle and for a planned economic system. Certain stages and episodes in this struggle are of great theoretical and practical interest, and have attracted the attention of scientific investigators, both within the Soviet Union and abroad. It is enough to mention the publication of such substantial works as *Russian Economic Development since the Revolution*, by Maurice Dobb (London, 1928), and *Die planwirtschaftliche Versuche in der Sowjetunion, 1917-1927*, by Friedrich Pollock (Leipzig, 1929), not to mention numerous articles in the periodical press. The publication of such serious books coming from the pen of competent foreign authors makes it unnecessary to relate in detail the history of the planning and planning organization of the U.S.S.R. Both Dobb and Pollock give a careful and systematic account, based on extensive study of Soviet sources and material.

Of special importance and great interest in the history of planned economy in the U.S.S.R. is the War Communism period, when the Soviet Government was engaged in stamping out the reckless opposition of the overthrown social classes, the landlords, capitalists and kulaks, while heroically resisting the armed intervention of the capitalist states. Although in those years of civil war and War Communism (1918-1921) economic activities were entirely subordinated to the tasks of consolidating the Soviet power and defending the country against the forces of internal and external counter-revolution, and although extensive recreation of wealth did not, and could not, take place in the

national economy of the U.S.S.R., nevertheless that period afforded tremendous experience in planned economic organization, an experience which had an exceptionally great influence on the subsequent development of the economic thought and the economic institutions of Soviet society.

It is not our intention here to give a description and analysis of the economic organization and activities of the Soviet Union during the period of War Communism; that is not necessary to our purpose. Those who are interested in this period will find adequate material in the works of Dobb and Pollock referred to above, as well as in the classic work of L. Kritsman, *The Heroic Period of the Great Russian Revolution*, devoted to the epoch of War Communism. Under the great pressure of the exigencies of the situation of that time, that period served as a great school in the drafting of urgent economic plans and in carrying them into remarkably speedy execution. Vast cadres of war-economy organizers and workers received their experience and training during this period, and later under changed economic conditions and the New Economic Policy (NEP) they played, as they still do, an important part in the work of economic planning.

Let it be emphasized that it was at the end of this period of War Communism that, at the initiative of Lenin, the remarkable ten-year plan for the electrification of the country, the first perspective plan in the economic development of the U.S.S.R., was drawn up. Those were difficult days. The fires of civil war were still smoldering, and the territory of the Soviet Republic had not yet been entirely freed either from the bands of White Guards or the detachments of the interventionist armies of international capital. The productive forces of the country were at their lowest ebb; industry yielded no more than 20 per cent of its pre-war production; agriculture not over 50 per cent; no coal was mined; mineral fuels had practically disappeared from the market; communication between the various economic regions had broken down, and a crippled transportation system labored only in the interests of national defense. Everything was subordi-

nated to the elemental concern for fuel, bread, transportation and defense.

And at this moment, when the country was just returning to the paths of peaceful development, no less a man than Lenin, himself the greatest of realists, brought forward a ten-year program of electrification, a plan for the construction over a period of a decade, of thirty great regional electric stations, which, in addition to serving as the fulcrums for the levers of Soviet technical development were to mark a determined step toward the accomplishment of the great slogan of the Communist Party of the Soviet Union, which expects within this short historical period to attain and surpass the advanced capitalist countries in the economic-technical field. The contrast between the level of productive forces and the economic situation of 1920 and this plan of electrification was colossal, and numerous enemies within and without met it with mockery and scorn. The plan of electrification was dubbed the plan of electro-fiction. With all that, the steady hand of the leader of the October Revolution boldly laid out these regional electric stations, milestones marking the road toward the economic and technical development of the U.S.S.R.

He who laughs last laughs best. In spite of the calamitous failure of the 1921 harvest and the terrible famine that followed, in spite of the serious partial crop failure in 1924, in spite of withheld foreign credits and the direct hindrances put in the way of Soviet development by international capitalism, the land of the Soviets moved faster along the path of economic reconstruction than could possibly have been foreseen in 1920.

Lenin's electrification plan has been exceeded. A number of state regional power stations, such as the Volkhov near Leningrad, the Shatura and Kashira near Moscow, the Zemo-vehali station near Tiflis, the Balakhna at Nizhni-Novgorod, the Shterovka in the Donetz Basin, and others, have already been added to the chain of great power plants of the socialist industrialization of the Soviet Union. Many others, still more powerful, such as the Dnieprostroy in the Ukraine, with 650,000 horse-power, Svirstroy near Leningrad with 150,000 horse-power, Bobriki near

Moscow with 200,000 horse-power, are in the course of rapid construction in every economic region of the country. This history of the electrification plan of 1920 should serve as a lesson, to be remembered by those who are inclined to jeer at every great Soviet project, considering it as a mere unbridled fantasy, or like Paul Scheffer of the *Berliner Tageblatt*, who (partly depending upon certain Russian bourgeois specialists) regard all big Soviet plans as mere thoughts fathered by the wish. To every unprejudiced contemporary observer the experience of the electrification plan of 1920 should serve as a demonstration of the concrete reality of Soviet planning and Soviet economic construction.

How great, nevertheless, are the difficulties connected with the creation of a planning organization and the introduction of a general plan of systematic projection of the economic development of the U.S.S.R. is shown by the fact that when the country passed from the period of rehabilitation to that of economic reconstruction on the lines of the New Economic Policy, it was necessary to spend several years of tireless work on the preparation of *partial* plans covering the development of several such important branches of the national economy, as fuel, food, railways, sowing campaigns, grain collections and state budget, before it became possible to proceed to the drafting of a general plan for the national economy *as a whole*. Nor is this surprising. The establishment of an organized planned economy is, of course, not simply a question of the elaboration of the necessary methodology or of the working out of an adequate planning technique, however important they may be in themselves. It depends first of all upon the existence of certain prerequisite objective conditions in the very economic structure of the country and in the relations between its most important social sectors. In the first years of the New Economic Policy it was necessary to establish and strengthen the positions of state heavy industry and the system of organization, to create a stable currency (the stabilization of the chervonets in 1924), to organize a credit system, and to form a network of co-operative and state organiza-

tions for the regulation of trade, before it became possible to proceed to the construction of general plans for the entire national economy of the U.S.S.R. with any hope of success.

Thus was developed the so-called system of control figures of national economy, *i.e.*, annual operating plans for the development of the national economy, drawn up each autumn for the coming fiscal year after the results of the harvest are known. The first series of control figures was prepared for the fiscal year 1925-1926, and since that time they have come to be an integral part of the system of economic planning of the U.S.S.R., every year taking a more important position in the public consideration and playing an ever more responsible part in the organization of a system of planned forecast and planned control of the development of the national economy of the Soviet Union.

What are these control figures? Annually in advance they assign to every important branch of state industry definite tasks with regard to the development of its production during the coming year; they calculate, by methods of scientific prognosis, the probable size of the crops of agricultural products that are to be expected from the next harvest; they put definite tasks to the state and co-operative organizations with regard to the collection of grains and agricultural raw materials; they contain careful and binding plans for the extension of the areas under cultivation and for increasing their productivity for supplying agriculture with machinery, mineral fertilizer, etc.; they determine the policy with regard to the level of agricultural and industrial prices for state and co-operative organizations; they fix the amount of exports and imports and the minimum balance of trade and international settlements; they estimate the income and expenditures of the state budget, the possible limit of currency issue, the income from state industry as a whole, from transportation and from the banks; they lay down the policy with regard to the course and rates of foreign exchange; and finally they fix the amounts of capital to be invested in industry, transportation and agriculture, in housing and public construction. In a word, the control figures lay down a general economic

plan for this huge country with a population of 150 million people for a year in advance. Or, to put it differently, the control figures comprise, in rough approximation, the provisional balance sheet of the reproduction of wealth on an increasing scale in the national economy of the U.S.S.R.

More than that! As every other project in the land where socialism is under construction, the control figures must supply an unequivocal answer to the fundamental social and political question of changes in the mutual position and power of the various social classes during the course of economic development, and as to the share of the socialized and private sectors in the national economy as a whole. In other words, they must discover to what extent the strengthening of elements of socialism in the national economy and the elimination of the elements of capitalism from it are assured during the years covered by them. All economic indicators without any exception are subjected to the most careful analysis from the point of view of the processes of socialization. The entire system of economic levers is put into motion for the purpose of strengthening the socialist position and extending the sphere of influence of the socialized forms of economic activity, the only forms that assure the growth of the productive forces.

The control figures for each year are published together with an elaborate system of indicators showing the curve of development of the national economy for several preceding years. The planning for the future rests on the most careful analysis of both the present and the past. The published volumes of control figures accordingly assume the significance of a special encyclopedia of the national economy, brought up to date each year, with new additions and supplements.

Since 1925-1926, the four years for which control figures were drawn up and published, they have undergone a certain evolution in their structure and in their relative importance to the other documents of the planned economy. The result of this evolutionary process was the transformation of the control figures from a mere *estimate* of the general progress of the national

economy during the coming year, made for the purposes of orientation only, into *the* annual *plan* for the development of the national economy which, upon its confirmation by the government, is made the foundation for *all* other partial economic plans, however important some of them, such as the industrial plan and the budget, may be. The control figures for 1925-1926 and 1926-1927 were still but estimates for the purposes of orientation, furnishing the general economic background; and the government did not pass on them beyond accepting them as a source of information and reference. The various individual economic plans, such as the industrial plan, the plan of imports and exports, and the food and raw material supply plans, alone required and received the approval of the government. It was not until 1927-1928, the year in which the rehabilitation period was practically completed, that, thanks to the consolidation of the key economic positions and the experience already accumulated in the sphere of planning, it became possible to take a big step forward and transform the control figures into a *plan* for the national economy. The government confirmed the underlying theses and the statistical limits of the control figures, thus making them the basis of the aggregate economic development of the country. The rôle and importance of the control figures were still further strengthened in 1928-1929 when the plans for the economic development of individual regions were included in the control figures as part and parcel of the general economic plan. The control figures met with a tremendous popular response throughout the country and aroused considerable interest abroad.

Since the already mentioned works of Maurice Dobb and Friedrich Pollock make available to the European and American reader a fairly detailed account of the structure and methodology of the control figures, it is not necessary to dwell upon them here at any great length. It is enough to emphasize the strictly scientific and expressedly socialistic character of the planning work and hence of the quite extraordinary document of planned economy, or of the control figures themselves. A careful study of the actual dynamics of national economy during the preceding

years is made the basis of all planning for the future. Teleological methods, never losing sight of the purposes pursued, and scientific prognosis combine into the organic synthesis of Soviet scientific planning. Naturally, there are still many deficiencies and shortcomings. The inadequacy and tardiness of the statistical material, which as yet only slightly covers and reflects the reconstructive forces in the development of national economy, the complexity of the economic situation during this period of transition, the development of class forces and of the class struggle—all these and many others have the effect of making the work on the control figures extremely involved and adding countless difficulties to them. With all this, however, the very methods and forms of the work are so effective and fruitful that they make it possible to overcome all obstacles. But one thing must be firmly borne in mind: the control figures, like all perspective plans in the U.S.S.R., are not the result of the labors of the Gosplan alone; they represent rather a supreme generalization of the sum total of the economic theory and business practice of numerous institutions and, what is more, of the vast community of toilers united by the single idea of the planning and upbuilding of a socialist economy.

Of paramount interest is the question of the extent to which the plans embodied in the control figures may actually be accomplished. The control figures for each operating year supply a comparative table in which the control figures for the preceding year are put side by side with the statistics of the actual economic achievements of the last year. These comparative data show that with every succeeding year the control figures are gradually and with ever greater exactitude measuring the actual extent of possible economic development. This is what Stuart Chase has in mind when he is impelled to admit that the actual developments do not depart too radically from the estimates of the Plan. It is significant that hitherto the control figures have tended to underestimate the potentialities of state industry; the actual growth of industrial production has far exceeded the provisions of the Plan. On the other hand, in the case of agriculture, reality has

fallen short of expectations. However, this discrepancy is explained not merely by the difficulties and imperfections of prognosis in this sphere, but also by a series of various natural causes adversely affecting the development of agriculture. In the field of communication, the state budget, capital investments, imports and exports and others, the control figures have very successfully anticipated reality. More substantial deviations may be noted in the relative price levels of various commodities, particularly on the "free" market.

Mention must here be made of the U.S.S.R. system of statistical indicators (*konjunkturs*) showing the trend of economic development and performing the function of a kind of watch-tower for planned national economy. A special division of the Gosplan consisting of *konjunktur* experts (statisticians specializing in determining economic trends) and a similar body in the Central Statistical Department, systematically publish monthly, quarterly, semi-annually and annually statistical surveys of economic conditions, based on a large number of indices embracing the significant developments of all branches of national economy. This makes it possible, even in the course of the very process of their execution, to introduce necessary corrections in the control figures, assuring at the same time the widest publicity and public control in the carrying out of the economic plans. We have already pointed out that the work of compiling the control figures for each year attains the proportions of an extensive public campaign, as a result of which the figures assume the character of a national economic plan in the fullest sense of the word. The statistical surveys may be regarded as reports from the economic battlefield, by which both the government and the public opinion of the Soviet democracy are guided in their determination of the strategic sections upon which their combined efforts are to be directed. This system makes possible not only the accumulation of valuable experience in the planning of economic development, but also the training of large numbers of active workers constantly and fully informed of the development trends of national economy as a whole. It will be easily

understood how tremendously significant this is to the cause of socialist construction in the U.S.S.R.

Only out of soil that has been cultivated for years by the revolutionary creative efforts of the great masses could spring the Five-Year Plan, which has now become not only the most popular of all the planning activities but also the generally accepted national program of economic and cultural development for the period which it covers.

Why, it may be asked, is the Five-Year Plan necessary at all? It is a matter of common knowledge that the preparatory work on the Plan went on for almost three years before it was considered possible to submit a draft to the XVI Conference of the Communist Party and the V All-Union Congress of Soviets. The need for planning over a long period of time grew ever more urgent as the end of the rehabilitation period drew nearer and the Soviet Union was ready to start on the road of the radical reconstruction of its national economy—toward new construction on an ever larger and more extensive scale. Huge projects of power plants, factories, mills, state and collective farms, demanding several years for their execution, the great radical transformation of the very foundations of the economic and cultural life of the country, could not possibly be put within the limits of such a single year's plan as is supplied by the annual control figures. Before the U.S.S.R., now past its pre-war level, arose in its full significance the question of the general course of its economic policy and its economic development. The interval between the XIV and the XV Congresses of the Communist Party, 1925 to 1927, was a period of intense ideological work and struggle, centered around the question of the general line of the economic development of the country. It was during this period that the idea of the socialist industrialization of the country as the general course of economic policy, found such a ready response. During the same period the work on the Five-Year Plan was started.

It might legitimately be asked, why just five years were chosen as the time basis for the planning of the economic development

of the next period. Many were of the opinion that such a period does not answer the purpose and that it is necessary to start at once on the drafting of a general plan covering a period of, say, fifteen years of radical reconstruction and gigantic new construction in the field of economics and culture in the U.S.S.R. It cannot be denied that this claim has a certain amount of reason and logic to back it. A period of five years certainly does not provide a framework large enough for the elaboration and solution of tasks of such magnitude as those which the Soviet Union faces. Nevertheless, it was necessary to forego the idea of proceeding immediately to the compilation of such a general plan and to recognize that as a transition stage the planning work had to be limited to the drafting of the Five-Year Plan. The reasons for this decision will easily be appreciated.

It should be remembered that a profound transformation is taking place in the Soviet national economy. The rehabilitation period was only recently completed; the period of new construction has only just been started. The gigantic problems of this new period, its potentialities, as well as its immense difficulties, are only now beginning to be realized; they do not as yet appear with sufficient clarity. The years immediately ahead of us will be marked by the tasks and difficulties of the new construction period. Before sufficient experience has been accumulated, before there has been an opportunity to learn from practical experience the conditions and possibilities of the reconstruction period, before the size and character of the difficulties besetting it can possibly be gauged, or its potentialities fully realized, it would have been unwise, shortsighted and mistaken to attempt to present to the country and the world a general, a fifteen-year plan for the development of the national economy of the Soviet Union, a plan which could not possibly be anything else than a program for the building of a fully developed socialist society. For such a task the economic, social and political experience gained during the reconstruction period is needed. When the Five-Year Plan was drawn, the planning organization of the U.S.S.R. still depended practically entirely on the methodology developed dur-

ing the rehabilitation period. It is for this reason that the Soviet Union adopted a plan of economic and cultural development as a program of socialist construction for the immediate five years, to serve as a great introduction to the general plan for building a socialist society in the U.S.S.R.

If the annual control figures acquired such great popularity and so important a part in the guiding of the economic system and in the social consciousness of the country during the last four years, the Five-Year Plan achieved the same distinction to an even much greater extent. And rightly so. The preparatory work of the Five-Year Plan lasted almost three years; several alternative drafts were drawn up and submitted to the test of scientific and public criticism; the XV Congress of the Communist Party, the highest political authority of the country, laid down carefully elaborated political principles to guide the work of drafting the Plan. All economic bodies and scientific institutions engaged in economics and industrial technique as well as all social organizations of the workers and peasants were mobilized for this work; and only then was the Five-Year Plan submitted to the V All-Union Congress of Soviets. In every factory and workshop the workers in their production conferences discussed the potentialities and prospects of their particular enterprises and the contribution they could make to the development of their own branch of industry in connection with the Five-Year Plan. Each of the numerous economic regions, each province, carefully considered its own potentialities, and in a spirit of keenest rivalry tried to sustain its position with regard to one or another phase of the Five-Year Plan before the central planning organization. There was not a single Congress of Soviets of the constituent republics or of the autonomous regions which did not have the Five-Year Plan under consideration prior to the V All-Union Congress of Soviets.

That is why it can be said without hesitation that the Five-Year Plan is, in the truest sense of the word, a plan of socialist construction developed by the people as a whole and embodying the class consciousness, the scientific thought, the great revolu-

tionary experience and the unshakable determination of the manual workers, peasants and brain-workers of the Soviet Union to build a socialist society. The Five-Year Plan is a program for the further extension and consolidation of the great October Revolution. Nor should the great international significance of the Plan be underestimated. For the first time in history, a vast country, with inexhaustible natural resources and a population of 150 million free people, faces the world with an elaborate plan for upbuilding a socialist economy and culture—a socialist society. We fully share the view expressed in the editorial of the *Pravda* of August 29, 1929: “The Five-Year Plan is an important part of the offensive of the proletariat of the world against capitalism; it is a plan tending to undermine capitalist stabilization; it is a great plan of world revolution.”

We shall now proceed to describe the fundamental perspectives of the economic and cultural development of the U.S.S.R. as contemplated by the Five-Year Plan.

CHAPTER II

THE ACHIEVEMENTS OF THE REHABILITATION PERIOD AND THE ECONOMIC CONDITIONS AT THE BEGIN- NING OF THE FIVE-YEAR PLAN

THE great task set by the Five-Year Plan for the development of the productive forces of the Soviet Union through rapid industrialization and steady strengthening of the socialist elements in national economy, is that of attaining and surpassing the technical and economic level of the advanced capitalist countries, thus assuring the triumph of the socialist system in its historic contest with capitalism. Accordingly, economic development in the Soviet Union must be measured, not against the miserable economic status of tsarist Russia, but by the standards of economic and cultural progress of the most advanced modern countries. With the aid of the colossal natural resources of the Soviet Union, the advantages afforded by its system of an organized and planned national economy, the creative impulse of the popular energies released by the October Revolution, and the latest achievements of modern technique, the object must be to secure a rate of economic development higher than that possible to, or that can be attained by modern capitalist countries.

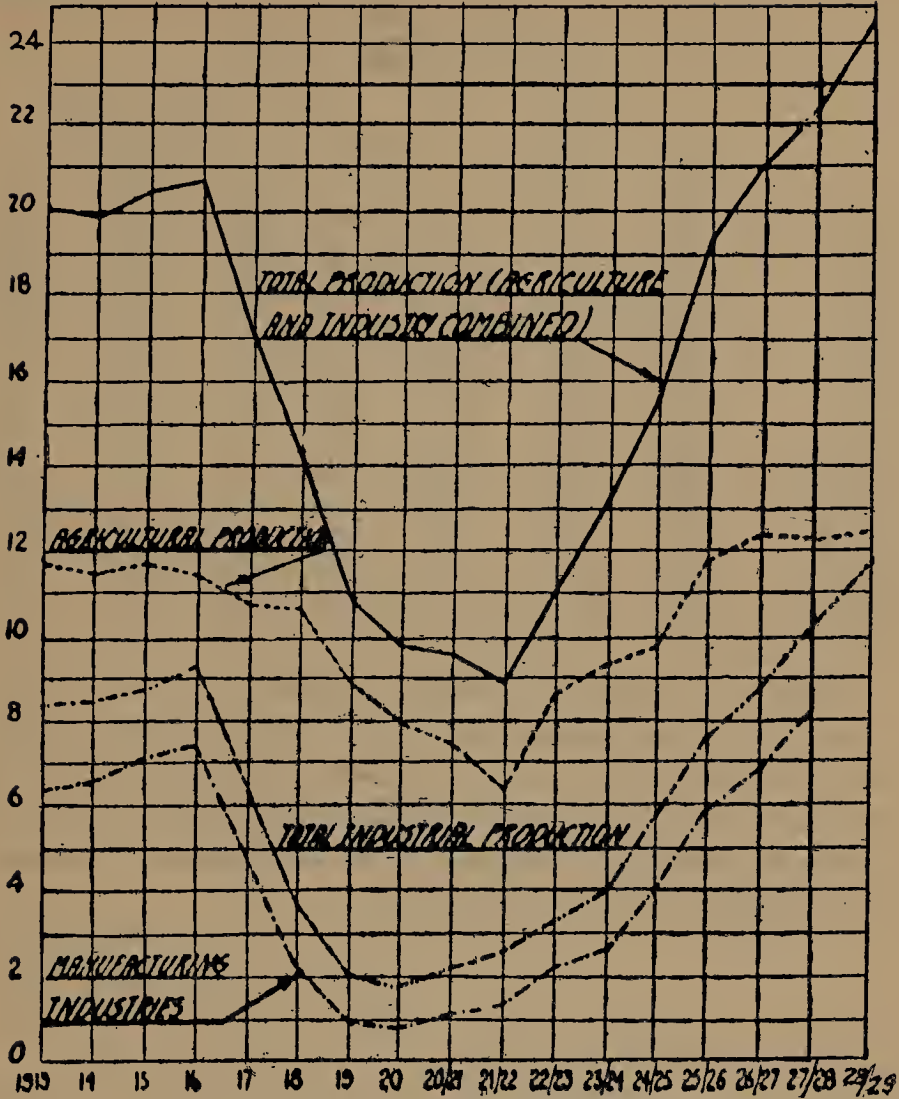
This, however, does not rule out the necessity of introducing the Plan with a general analysis of the preceding stage of economic development and a summarized comparison of the present productive forces of the Soviet Union with those of pre-war Russia. While the significance of such a comparison is limited (especially considering the inaccuracy of the estimates for the year 1913), it still does clearly illustrate the achievements of the Soviet Union during the elapsed period of rehabilitation and the economic weaknesses which must be remedied if the development of socialist economy is to progress successfully.

The memory is still alive of the disastrous effects of the World

War and Civil War upon the productive forces of the country. It is unnecessary to recall the wrecked condition of economic life in the country at the conclusion of the Civil War, which ended in a crushing defeat for the united forces of Russian bourgeois and feudal reaction and its allies in Western Europe. Industrial production had fallen to 20 per cent of pre-war and agricultural production, to 54 per cent. The output of mineral fuels and of metal ores had stopped almost completely. The number of workers had decreased to 60 per cent of the pre-war level, and real wages to 35 per cent. The transportation system was serving almost exclusively military requirements, and economic relations between the various regions were completely wiped out. The market had disappeared and the monetary system had been destroyed. The terrible famine of 1921 came as an additional blow to the disorganized economic system of the country.

The most sanguine optimists did not anticipate a restoration of the national economy to the pre-war level before 1930. However, the tremendous efforts of the masses of workers and peasants, who had carried the great civil war to a victorious conclusion, a correct economic policy, and the iron will of the proletariat, assured the completion of the rehabilitation period in a much shorter period. By 1927-1928 the country had surpassed the pre-war economic level and had started on the road of basic reconstruction. The decline and the subsequent advance of the productive forces of the country are shown by the diagram on page 33, and by the following table. These figures afford a vivid illustration of the great tasks of the rehabilitation period:

BILL RBL'S



GROSS PRODUCTION OF THE SOVIET UNION *
(In Billions of Rubles at Pre-War Prices)

* Figures for 1928-1929 were added by the editor. No total figures were available for manufacturing industries.—Ed.

GROSS PRODUCTION OF THE NATIONAL ECONOMY OF THE SOVIET UNION

(in billions of rubles at pre-war prices)

Years	<i>Manufacturing</i>				<i>Ratio to 1913 (Per Cent)</i>		
	<i>All Industry</i>	<i>Industries</i>	<i>Agriculture</i>	<i>Total Production</i>	<i>Industry</i>	<i>Agriculture</i>	<i>Total</i>
1913	8.43	6.39	11.61	20.04	100.0	100.0	100.0
1914	8.43	6.43	11.36	19.79	100.0	97.8	98.8
1915	8.66	7.06	11.75	20.41	102.7	101.2	101.8
1916	9.22	7.42	11.50	20.72	109.5	99.0	103.4
1917	6.38	4.78	10.72	17.10	75.7	92.3	85.3
1918	3.66	2.16	10.62	14.28	43.4	91.5	71.3
1919	1.95	0.95	8.86	10.81	23.1	76.3	53.9
1920	1.72	0.82	8.00	9.72	20.4	68.9	48.5
1920-21	2.08	1.08	7.42	9.50	24.7	63.9	47.4
1921-22	2.54	1.44	6.31	8.85	30.1	54.4	44.2
1922-23	3.33	2.13	8.54	11.87	39.5	73.6	59.2
1923-24	4.05	2.59	9.28	13.33	48.0	79.9	66.5
1924-25	5.65	3.96	9.75	15.40	67.0	84.0	76.8
1925-26	7.58	5.72	11.76	19.34	89.9	101.3	96.5
1926-27	8.76	6.72	12.37	21.13	103.9	106.5	105.4
1927-28	10.08	8.14	12.26	22.34	119.6	105.6	115.5
1928-29 *	11.77	....	12.48	24.25	139.7	107.5	121.0

Along with these very general indicators of the economic development, the following table shows the great changes that have taken place in the economic structure of the country since 1913, and, at the same time, also points out some of the weak spots which have to be remedied in order to insure the uninterrupted growth of socialist construction.

	<i>Unit</i>	<i>1913</i>	<i>Amount 1927-28</i>	<i>1928-29 *</i>	<i>Ratio of 1927-28 to 1913 (P.C.)</i>	<i>Ratio of 1928-29 * to 1913 (P.C.)</i>
<i>I. Output of Electric Power</i>						
	mils. kwh.	1,945	5,050	6,600	259.6	339.3
Of this central sta- tion	mils. kwh.	690	1,870	2,415	271.0	350.0
<i>II. Fuel</i>						
Coal	mils. tons	28.9	35.4	41.1	122.5	142.2
Petroleum	mils. tons	9.3	11.6	13.2	125.8	141.9
Peat	mils. tons	1.55	6.9	7.7	446.2	500.3
<i>III. Machine Construction</i>						
Internal combus- tion engines ...	1,000 hp.	26.5	106.9	150.0	403.4	565.0
Agricultural ma- chines	mils. rubls. at list prices	67	125	162.0	186.6	241.8

* Figures for 1928-1929 were added by the editor.

		Amount			Ratio of 1927-28 to 1913 (P.C.)	Ratio of 1928-29 to 1913 (P.C.)
		1913	1927-28	1928-29		
IV. Metallurgy						
Iron ore	mils. tons	9.2	5.7	7.1	62.0	76.8
Pig iron	mils. tons	4.2	3.3	4.1	78.6	97.6
V. Chemical Industry						
Soda	thous. tons	154	205	249	133.1	161.7
Superphosphates .	thous. tons	55	150	261	272.7	474.5
VI. Items of General Consumption						
Cotton fabrics . . .	mils. mts.	2,250	2,742	2,970	121.9	132.0
Woolen fabrics . .	mils. mts.	95	97	105	102.1	110.5
Granulated sugar.	thous. tons	1,290	1,340	1,340	103.9	103.9
VII. Agricultural Production						
Grain	mils. tons	81.6	73.1	74.5	89.6	91.3
Cotton, unginned .	thous. tons	744	718	861	96.5	115.7
Flax, fiber	thous. tons	454	248	346	54.6	76.2
Sugar beet	mils. tons	10.9	10.1	10.6	92.7	97.2

The first point brought out by this table is the tremendous expansion of power resources and machine construction. The production of coal in 1927-1928 amounted to 122.5 per cent of the 1913 production; that of petroleum to 125.8 per cent; of peat, to 446.2 per cent; of electric power, to 259.6 per cent; of internal combustion engines, to 403.4 per cent; of agricultural machinery, to 187 per cent.* Here is clear evidence that new construction work of great magnitude was started *while the rehabilitation process was still under way*. The guiding idea of the Five-Year Plan is to carry at an even more intense pace the development of those industries which are of decisive importance to the whole progress of socialist industrialization.

A second fact to be noted, which looms as a serious handicap to the further progress of industrialization, is the failure to restore the iron industry to even nearly the pre-war level and its lagging far behind the growth of machine construction and the general requirements of the national economy. In the year 1927-28 the production of iron ore was 62.0 per cent of the 1913

* The figures available for the first half of the year 1929-1930 show a considerably greater increase in the level of industrial production. For example, the output of coal was 24.7 million tons, or 171.2 per cent of the 1913 average; petroleum, 7.6 million tons, or 163.4 per cent; pig iron, 2.4 million, or 115.5 per cent; superphosphates, 155,000 tons, or 563.6 per cent; cotton fabrics, 1,552 million meters, or 137.9 per cent; and woolen fabrics, 65.5 million meters, or 137.9 per cent.—*Ed.*

production; manganese ore, 56.6 per cent; pig iron, 78.6 per cent; steel ingots, 95.2 per cent; and rolled shapes, 91.4 per cent. This is one of the central points in the whole scheme of economic development, and it demands the most assiduous attention. As will be shown later, enormous efforts and resources will be provided by the Five-Year Plan in order to remedy this situation.

Another group of important problems relates to the production of manufactures for consumption. For a number of the most important products, the 1927-28 production has considerably surpassed that of 1913, the ratio of the former to the latter being 121.9 per cent for cotton fabrics, 102.1 per cent for woollen fabrics, 103.9 per cent for granulated sugar, 116.3 per cent for salt, 132.1 per cent for rubber shoes. The growth of production, however, though proceeding at a faster rate than the increase in population, has been insufficient to meet the rapidly growing demand of the last years and, as a result, a shortage of consumption goods has developed. Proper attention must be given this group of industries, with a view of eliminating this shortage and of considerably increasing the consumption of manufactured goods.

A fourth point is in regard to industrial crops, which, although showing considerable expansion in recent years, still fall short of the developing needs of industrial production. The total area sown to industrial crops in 1927-28 was 132.7 per cent that of 1913. The yield per acre, however, is so low that the gross production of the leading crops is still below the pre-war level. The rapid progress of industrialization, the expanding needs of the population, the requirements of agricultural reconstruction and, finally, the importance of reducing the dependence of the country upon foreign sources for this class of raw materials, all dictate the necessity of energetically promoting the expansion of this division of agriculture.

Finally, a point that must be particularly emphasized is the considerable deficiency in grain production, which, if it should assume a protracted character, would become a threatening factor in the face of the growing demand of the population and

the requirements of rapid industrialization. The area planted to grain in 1927-1928 was 94.8 per cent of the 1913 acreage, and the total grain production in the past few years has fluctuated between 90 and 96 per cent of the average for the five years 1909 to 1913. Here is very clearly presented another crucial point in the reconstruction scheme, to which no less energy must be applied than to the metal industry. A rational solution of this problem will be secured, on the one hand, through progressive improvements in farming methods (late autumn plowing, rotation of crops, increase of live stock and of machinery, etc.) and, on the other hand, through the strengthening of the socialized sector in agriculture.

A considerable improvement has taken place, as compared with 1913, in regard to transportation conditions. The total railway mileage of the Soviet Union in 1927-28 was 30.5 per cent above that of 1913 in the same territory, and the total railway traffic was 14.4 per cent larger than in 1913. *Transp.*

In the course of the reconstruction period the number of workers has regained the pre-war level, real wages in industry have increased by 30 per cent as compared with 1913, and the average output per worker, by 15 per cent. The position of the proletariat in the economic system has been strengthened.

It must be noted that these results were achieved, not only with a strict observance of the eight-hour day, but also with the taking of the initial steps in 1928-1929 for the introduction of the seven-hour day.

The successful accomplishment of the currency reform at the beginning of the rehabilitation period, and the resulting stabilization, have provided the possibility of establishing the financial system on a sound basis, of organizing the budget and credit system, of mobilizing a considerable share of the national income for the financing of economic and cultural development through the medium of the government budget. In 1927-1928 the combined (federal and local) budget absorbed as much as 24 per cent of the national income. As will be shown in a later chapter, it has been rendered possible, even before the completion of the

rehabilitation period, to take up the problem of a single plan of financing for the entire economic system of the country.

Notwithstanding the powerful resistance of the capitalist countries and the tremendously increased requirements of domestic consumption, the export trade attained in 1927-1928 to about 800 million rubles or about 60 per cent of pre-war Russian exports. This was achieved while maintaining the government foreign trade monopoly unimpaired and enforcing it with increased effectiveness.

The growth of the volume of production and of the productivity of labor was reflected in an increase in the national income in 1927-1928 to 105 per cent of the pre-war. In the five-year period ending with that year, the national income was rising at an annual rate of 10 per cent, a rate unprecedented not only in the economic history of pre-war Russia, but also in that of other incomparably more advanced countries.

Such are the main data illustrating the advance of the productive forces of the country in the reconstruction period and the economic condition of the U.S.S.R. at the outset of the five-year period covered by the Plan, as compared with pre-war Russia. Rehabilitation has been accomplished in a comparatively short time, with the country's own internal resources and without foreign aid. It has been accomplished along the lines of industrialization of the country and of the strengthening of the socialized sector of the national economy, as may be clearly seen from the following figures:

	1924-1925	1927-1928
	(Per Cent)	
(1) Share of net industrial output in total net output (including excise tax)	25.9	31.6
(2) Share of basic capital of industry in total basic capital	13.5	14.0
(3) Share of net production of the socialized sector in total national income	40.8	51.0
(4) Share of basic capital of the socialized sector in total basic capital	50.2	52.8
(5) Share of the socialized sector in total volume of trade	72.6	86.1

The Five-Year Plan has been drawn up at a time when the economic development of the Soviet Union has reached a decisive

turning point. Reconstruction problems of immense scope and of enormous difficulty have to be faced. The country is opening a new page in its economic history. It is starting on a new and steep road in its development. The experience of the five-year period just elapsed has demonstrated that the Soviet Union possesses all the potentialities and all the conditions required in order to assure the broadest development of socialist economy in the near future. It is the object of the Plan to map out the program of that development for the next five years.

The year 1928-1929, the first under the Plan, has demonstrated that the reconstruction of Soviet national economy at the projected tempo and the elimination of "weak spots" are quite feasible. It has also shown that there are untouched potentialities for progress even more rapid and decisive. The great power of socialist rivalry, a method of economic stimulation open only to socialist society; the adoption of the continuous work week; the development of state and collective farming beyond the provisions of the Plan, have furthered the pace of the country's economic development and increased the prospects not only of attaining, but of surpassing the program embodied in the Plan.

CHAPTER III

THE PRINCIPLES AND THE GENERAL LINE OF SOVIET ECONOMIC DEVELOPMENT

THE Communist Party of the Soviet Union, the Workers' and Peasants' Government and public opinion in the U.S.S.R. have, and not for the first time, been confronted with the problem of the general course of economic development during the present transition from a period of rehabilitation to one of new construction. The problem has occupied the revolutionary thought of the country since the days of the October Revolution.

The general line of the economic development of the Soviet Union was determined by the nature of this revolution; but the formulation of a concrete and detailed program of economic reconstruction has taken place only gradually and on the basis of the actual experience of the past decade. In the determination of the general guiding line and the very idea of a planned economy, as well as in the working out of the concrete projects of economic reconstruction, the leader of the October Revolution, Lenin, had quite an extraordinary part. The work of the socialist reconstruction of the Soviet Union is based on the great teachings of Leninism.

In his numerous addresses and writings, from the time of the October Revolution until his death, and especially in his last remarkable series of articles, Lenin exhibited a tireless consistency in calling to the attention of the revolutionary workers and peasants of the U.S.S.R., the problems of industry in general and those of heavy industry—the production of the means of production—in particular. All the essential elements of that program of industrialization which has now grown so vast in the consciousness of the people of the Soviet Union as well as in its practical development can be found clearly and forcefully formulated in Lenin's last writings.

Industrialization is not only the high road to socialism and the only way of protecting the independence of the Soviets against the imperialistic world powers, but is also the primary prerequisite for maintaining and strengthening the worker-peasant bloc and for the socialist reconstruction of peasant life.

All these elements of the general doctrine of socialist industrialization were preached by Lenin in the last years of his life with remarkable power and deep conviction. We shall quote, in his own words, some of his statements on these fundamental points.

As early as 1920, at the very beginning of the period of reconstruction, Lenin said of the up-building of heavy industry:

We know well that Russia's salvation lies not only in good crops gathered by the peasants: that is not enough; and not only in the good condition of the light industries: that is not enough either. We also need the heavy industries. . . . Heavy industry requires subsidies from the State. If we fail to provide them, we shall be doomed even as a civilized country, much more as a socialist one.

In 1921, in a letter addressed to the VIII All-Russian Congress of Electrical Engineers, he wrote as follows:

I have had more than one occasion to express myself on the importance of the book, *The Electrification Plan*, and even more so on the importance of electrification. Large-scale machine production and its introduction into agriculture is the only possible economic basis of socialism, the only basis for a successful struggle for the liberation of mankind from the yoke of capitalism; from the slaughtering and maiming of scores of millions of people in order to determine whether it shall be German or English, Japanese or American looting that shall have the greater share in the division of the globe.

We could easily multiply the quotations from Lenin's statements on the rôle of socialist industry, remarkable for their consistency, broadness of outlook, and deep conviction.

The enormous importance of the electrification plan, ratified at Lenin's initiative by the VIII All-Russian Soviet Congress in 1920, must again be stressed here. This plan related not merely to the construction of 30 regional state electric stations. It also

comprised the first extensive program of industrialization—the first difficult step toward defining the general lines of the economic policies of the Soviet Union. Those who took part in the VIII Soviet Congress remember keenly the peculiar, stern solemnity and the genuine pathos that prevailed at the discussion and during the ratification of the electrification program by the supreme organ of revolutionary power, in a country which was just emerging from a cruel and victorious civil war. That large volume which deals with the electrification plan of 1920 is now a rarity, but every one in the Soviet Union still remembers with what insistence Lenin demanded that the book on electrification should be available in every workers' club, every rural library, every school. The plan of national economy was conceived as a people's plan that should have the understanding and the enthusiastic support of the millions of workers and peasants. The V All-Union Congress of Soviets, which ratified the Five-Year Plan of 1929, demonstrated that this tradition is still fully alive and that the program projecting the course of socialist development in the U.S.S.R. for several years ahead has become a factor of tremendous power in mobilizing the will and efforts of the masses of the people. This particular aspect of the Plan was well described at the Congress by Krzhizhanovsky, Chairman of the State Planning Commission, when he said:

We have just released the fifteen hundred pages of our collective work (the Five-Year Plan), and already we feel that the basic figures embodying the rate of progress of construction there discussed have become widely known to the country. In a little while every worker and every peasant will be aware of their significance. They will be fixed in everybody's memory as the guiding line upon which the entire attention of the active portion of our people must be concentrated. All our future depends upon the attainment of the rate of progress laid down in them.

But that is not the whole significance of the electrification plan of 1920 in the history of the evolution of the Soviet industrialization program. It is in connection with the electrification plan that the power concept of economic development has become so widely popular among the masses in the Soviet Union and has

been adopted as a program of state policy. Electrical power plays an enormously important revolutionary rôle, as a means of concentrating and rationalizing production, of demolishing the backward economic order, and of securing a productive basis for socialist society. No one in the Soviet Union conceives socialist industrialization otherwise than on a basis of country-wide electrification.

These cursory remarks in regard to the genesis of the present Soviet industrialization program are designed to emphasize the fact that this program, which is an outgrowth of the general principles of Marx and Lenin on the transition from capitalism to Communism, was born in the tempest of the October Revolution and took shape gradually, as it was necessary to devise solutions of the pressing practical problems incident to securing more firmly the proletarian dictatorship and the socialist development of the Soviet Union. Attempts now made to treat the present program of industrialization as a new departure, an improvisation of the last few years, a break with Lenin's traditions and a revision of his doctrine, are, therefore, no more than the product of ignorance or plain political blackmail on the part of the enemies of the socialist development of the Soviet Union. Particular cynicism in this sense is displayed by the adherents of the Austro-Marxian school, who try in some instances, as Friedrich Adler does, to exploit Lenin's name in an outrageous manner in the struggle against the victorious advance of socialism in the Soviet Union.

However, while it is true that the basic principles of the socialist industrialization program were formulated at the very beginning of the period of economic reconstruction, this fact neither effaces nor detracts from the tremendous importance of the intellectual effort which the Communist Party, the Soviet Government, and the public in the Soviet Union at large had to exert in order to definitely shape the general lines of economic development and to embody them in a concrete program of socialist industrialization when the rehabilitation period was at an end and that of constructive development began.

The effort was necessarily tremendous. The productivity of the old basic capital was exhausted. Gigantic problems involving a thorough reconstruction of the national economy had to be faced. New construction projects had to be started on a very large scale. Radical transformation of the traditional modes of country life and agricultural production was on the order of the day. And all this under conditions of growing hostility from the capitalist world and increasing class resistance of the capitalist elements within it. Would it have been possible, in such circumstances and in the face of such problems, to have steered the Soviet ship without clearly defined general lines of economic policy, and a broad and thoroughly detailed program of economic construction? Was it possible that in this crucial transition period the problem of the general economic policy—the industrialization of the country—should not have given rise to an intense political struggle and a strenuous effort at scientific inquiry? It was, of course, impossible. It is precisely on this point that the various social forces within the country confronted each other and that the opposition between the Soviet Union and the capitalist world became acute. This was the struggle that marked the period between the XIV and XV Congresses of the Communist Party of the Soviet Union (1925-1928).

What, then, are the basic principles of the full program of socialist industrialization of the Soviet Union? What were the points of political controversy?

The development of the productive forces of the Soviet Union is a steep, uphill advance. Boundless possibilities for it have been opened by liquidating the survivals of feudalism left by tsarist Russia, and by the expropriation of the capitalists, as well as by the tremendous natural resources of the U.S.S.R. However, not every development of productive forces is acceptable to the Soviet régime, which rejects all forms of development which would imply the strengthening of the positions of the capitalist elements in the national economy.

In the past few years what appeared on the surface to be a theoretical controversy was carried on in the Soviet economic

press between the Communist and the bourgeois specialists. The question was that of precedence between the work of economic development—increase in the productive forces—and socialization. This, however, was not essentially a theoretical discussion. The theoretical form was only a setting for the political struggle, which was carried on, in the final analysis, over the question of a capitalist versus a socialist course of economic development. It should, therefore, be emphatically stated that the central idea which determines the economic policy of the Soviet Government is such a development of productive forces as can be accompanied by a steady progress of socialization, a decisive elimination of capitalist elements and a consistent strengthening of socialist elements all along the economic front. Likewise, there can be no doubt that it is only through collective forms of economic activity, that is, through the socialist method of economic development, that free and boundless opportunities are really opened for the growth of productive forces. On this point there can be no vagueness nor ambiguity.

Such a development can, of course, only be accomplished by widening, strengthening and accelerating the position of socialist industry in the general economic system; that is, through *furthering socialist industrialization*.

Not every type of industrialization, then, could meet the requirements of the Soviet program of economic development. What is required at the present stage of development is not only a relatively greater ratio of general industrial output to total production in the country; it is even more important that progress in the industries producing the means of further production shall be in advance of that in all other fields—in those industries, that is to say, which form the first division of the system of reproduction on an increasing scale as formulated by Marx. Precisely here is what Lenin called the first link that must be grasped with the utmost strength in order to pull the entire chain of socialist development in the Soviet Union. A country predominantly agrarian, with an underdeveloped industry and the prevalence of an agriculture extremely backward in its

methods, has to be transformed into a country basically industrial, where industry shall predominate and agriculture be highly industrialized. Production of power and industrial machinery, as a means of increasing the power equipment available to national labor, is the primary objective. The development of socialist heavy industry, and of socialist production and means of production, are the direct objectives of a militant economic policy. This is especially true if we take account of the growing hostility of the capitalist world, which has set as the central political task of the day the organization of a "holy" capitalist crusade against the U.S.S.R.

A question that has been frequently and thoroughly discussed in the Soviet press and political documents during the last few years is that of the *rate of industrialization*, the tempo of industrial development. An alert public attention has been constantly attached to this question, as it has to that of the comparative tempo of Soviet and capitalist industrialization. The possibility of carrying out industrial development at the assigned rate under the present national income, and the question of the relationship between the proletariat and the peasantry, also received a keen public interest. As will be shown later, this is the point at which serious political interests come into conflict, and which gives rise to a political struggle. This is as expected.

No one can close his eyes to the fact that every year sees an increase in the scope and intensity of the great conflict, the universal historical contest between two economic and, consequently, social systems: the economic system of rising socialism and the declining system of capitalism. That gigantic contest has affected political relationships all over the world in the last decade. The Soviet Union, champion of the socialist economic idea, has come out with a frank and courageous program of "attaining and surpassing, in a comparatively short time, the technical and economic level of the advanced capitalist countries." This implies definite obligations. The whole world is aware that the fighting slogans of Bolshevism are no mere word play, that it knows how to concentrate its forces to attain the goals once set. And the goal

of "attaining and surpassing" has now become the immediate objective of Soviet economic policy. This formula has become the battle cry which inspires millions in their everyday struggle and effort. When viewed from this standpoint, as well as from that of strengthening the socialist position within the country, the task of securing the growth of productive forces through socialist industrialization, at a tempo that shall not slacken, but, on the contrary, shall steadily be accelerated, becomes one of urgent practical importance and of high responsibility. Millions of proletarians in the U.S.S.R. are on watch, lest the pace of industrialization slacken. And anything that may spell menace here meets with a powerful public rebuke.

Another consideration of prime importance that must be especially noted in the general program of economic development of the Soviet Union, is that relating to the independence of the country from the great capitalist powers. This idea, which is sacred to every worker and peasant in the Soviet Union, and also to every revolutionary proletarian in the West, and to every oppressed people in the East, is an integral part of the concept of the socialist industrialization of the U.S.S.R. This does not mean that the U.S.S.R. aims to reduce its economic intercourse with the capitalist world. On the contrary, the foreign trade of the Soviet Union has been expanding every year. The Five-Year Plan provides for its further extension to almost twice the present volume. But the point of essential importance in the Soviet economic program is that it admits of only such economic intercourse with foreign countries and such dealings with the capitalist world as shall not impair, but rather more firmly secure the independence of the country and its capacity for industrial growth, which, of course, includes preparedness for national defense. It is this that enrages the rapacious leaders of imperialism, who are anxious to "overthrow the Soviet Government, and then to exploit the natural resources of Russia"; and that restrains the valiant heroes of colonial looting. But it cannot be helped. The growing economic independence of the Soviet Union and its increasing preparedness for defense are of decisive

importance in the appraisal of all economic projects and plans. And we are willing to agree with Paul Scheffer, who has described the Five-Year Plan in the *Berliner Tageblatt* for July 12, 1929, as a "colossal defense plan, designed to safeguard and protect the unhampered realization of socialist ideas on Russian territory." But we know (as Mr. Scheffer does too, no doubt) that sufficient ground for such defense is afforded by the ruthlessly aggressive attitude assumed toward the Soviet Union by capitalist powers, which have unfortunately been increasingly successful, through what has been known as Germany's "Western orientation," in winning over that country, which is now just stretching her limbs for a new start on imperialist ventures.

The aspect of the program of socialist industrialization next in importance is the one relating to the advancement of agriculture and the socialist reconstruction of village economy. This problem was the subject of very ample discussion at the XV Congress of the Communist Party of the Soviet Union at the end of 1927, and has since been formulated in a number of the decisions of the Soviet Government. What capitalism means to the overwhelming majority of the country population in terms of economic exploitation, of "loot and depredation," is a matter of general knowledge. It is hardly necessary in our days to recall the treatment of the villagers of England by English capitalism at its dawn. Now there is being prepared and partly effected, under our eyes, a tremendous technical revolution in American agriculture, which in its essence is thoroughly progressive. As it is carried out, however, under the auspices of American capital, it has already accomplished, and will further imply the ruin of millions of farmers, who will be ruthlessly driven off their fields by the mechanization of capitalist farm enterprises.

Soviet agriculture is also on the verge of a great transformation. It is in the hold of great technical and social revolution. But as it is carried out under a dictatorship of the proletariat, it is as different as day and night from what is going on in capitalist countries. The developing national economy of the

Soviet Union has reached that decisive point when the problem of overcoming the poor productivity of the small individual peasant husbandry, which is incapable, because of its size and its entire mode of life and work, of assimilating machine technique and the principles of scientific agriculture, must be squarely attacked. There are only two possible ways of doing away with unprofitable small scale agriculture. One is through big capitalist farming, or, in other words, through enterprises of the village exploiters. The other is through the socialization of the great bulk of the holdings of the poor and middle peasants and their combination for joint production on a large scale, with the use of machinery and the application of scientific methods.

As will be shown in greater detail in later pages of this book, one of the most important and immediate points in the Soviet economic program is the curbing and final elimination of the kulaks—the capitalist top of the rural population—by means of the accelerated broad-scale development of state farms (*Sovkhoz*); and by combining the bulk of small and middle-size peasant holdings into collective farms (*Kolkhoz*), thus starting them on the road toward socialized agricultural production.

There could, in fact, be no program of socialist industrialization if this were left out. It is impossible to develop a big socialist industry, to gather and train a socialist proletariat, and oust the capitalist elements from the cities; while at the same time furthering the growth of large individual farming in the country, that is, leading agriculture into capitalist channels. These things preclude each other. That is why socialist reconstruction in the village, with all the responsibilities that it implies and all the horror it conveys to the philistine, is inseparable from the building up of socialist industry. These are the component parts of socialist industrialization. Unless this is realized there can be no understanding of the real meaning of the economic development and social relationships in the Soviet Union. Like the pace of industrialization, the problem of the socialist reorganization of village economy has been the object of keenest public interest and of serious political controversy. The Soviet economic pro-

gram here attacks the remnants of capitalism on its last line of defense, the system of private economy in agriculture. This, of course, is bound to cause the most furious class resistance from the capitalist elements that have survived in the Soviet social system. It is the object of the Five-Year Plan to secure victory for the forces of socialism.

One of the guiding ideas of the Soviet economic program is that of joint effort, organization, and of higher economic and cultural standards for the proletariat and the bulk of the peasants. What capitalist industrialization means to the proletariat and to the peasantry has been demonstrated by the bloody trail that has marked its advance through the generations. Capitalist rationalization of production since the war has afforded new and striking illustrations of ruthless exploitation of the workers and merciless economic destruction of the peasant masses, within the imperialist countries and, especially, in the dependencies and colonies. Only he who is blind or lets himself be deluded by the Social-Democratic camouflaging of present-day capitalist realities can fail to see the pressure applied everywhere toward the introduction of a longer working day combined with a reduction of real wages.

The decrease in the numbers of the proletariat, which is not only relative, but in many countries absolute; the growth of unemployment; the genuinely fascist measures for suppression of the revolutionary organizations of the working class; the dispossession of small property owners, and of the peasants, which is accomplished by inflation, by shifting to their shoulders unbearable burdens of taxation, and through high protective tariffs, has been wantonly practiced in our day in all capitalist countries.

This makes it particularly necessary for us to bring out forcefully the principles that determine the relationship between socialist industrialization in the Soviet Union and the proletariat and poor and middle peasantry.

The Soviet economic policy aims at a continuous numerical growth of the proletariat, at shorter working hours, and at a steady increase in real wages and improvement in the economic

and cultural standards of the working class, from year to year. At the same time it tends to raise the standards of the poor and middle peasants; to bring about a greater equality the standards of living in both city and country and to bridge the chasm that has separated them for centuries. The union between the city (of the socialist proletariat) and the country (of the poor and middle peasants who are passing through a profound transformation in their modes of production and social standards), finds expression not only in the course of the country's production, but also in the projected improvement in the standard of living of the proletariat and the peasantry. Those two objectives are inseparable links in the chain of socialist industrialization of the Soviet Union.

Finally, a matter of tremendous interest both in principle and in practical application is that of the relation between socialist industrialization and the Soviet policies in regard to the problem of nationalities. The triumphal march of capitalist civilization has been marked by the graves of colonial peoples given over to total destruction and the wanton looting of entire continents. At the present time, too, the capitalist world is in a permanent state of colonial warfare, waged to gain access to backward countries and peoples for the purpose of exploitation. Indeed, the peace treaties which terminated the Imperialist War of 1914-1918 have placed the defeated civilized countries in the condition of dependent and almost semi-colonial states.

This background of capitalist colonial policies serves to put into even greater relief the treatment which is accorded, under the Soviet economic and social system, to the economically backward regions of the country and the nationalities that were oppressed under the tsarist régime. The record of the Soviet State in dealing with the problem of nationalities is a matter of general knowledge. The political, economic, and cultural advance of the backward peoples and nationalities in the Soviet Union, which has been accomplished through the Soviet economic policies, has found a powerful echo in the tempestuous rise of the national-revolutionary movement in the eastern colonial countries. The

Five-Year Plan of economic development sets further and wider objects for that advance. The concrete provisions of the Plan, which will be found in subsequent pages, will show to what extent the entire economic program has taken into account those national policies which have made the Soviet State a point of attraction for all oppressed nationalities of the world.

These are the outstanding objects of the Soviet program of socialist industrialization, which is the foundation of the economic policies and of the reconstruction program for the present period. Every unprejudiced reader will see how closely these objects are interrelated, and to what extent they proceed logically from the October Revolution and the revolutionary teachings of Leninism. It is not necessary to emphasize the fact that this program of socialist industrialization, as well as the program of socialist development as a whole, requires a most extensive advance of scientific knowledge and a complete assimilation of the highest achievements of modern science and technique. Indeed, it is only socialist economy, organized and run in accordance with a general plan, that for the first time in history affords the possibility of a scientific economic policy and boundless opportunities for the unhindered advancement of human knowledge.

As has been stated above, this concept of socialist industrialization as the guiding principle of Soviet economic policy was fully evolved during the period from 1925 to 1928; and chiefly at the XIV and XV Congresses of the Communist Party of the Soviet Union. Those meetings were of enormous interest and of altogether exceptional importance in defining the means of socialist development in the Soviet Union. It was not a simple matter. A tremendous intellectual effort and a strenuous political struggle were required before this program of socialist industrialization won general recognition as the guiding principle of constructive work; and became the most popular idea among the masses of the people.

Theoretical clarification had first to be achieved. To clear the road for the program of socialist industrialization it had to be

swept clear of the so-called "agrarization"* ideas. This work was performed chiefly during the period of the XIV Congress of the Communist Party, that is, in 1925 and 1926. It was the program of those who favored the greatest effort being put on the development of agriculture before industry that such advance be secured by doing away with all that interfered with the growth of large peasant holdings. They wished to export large quantities of agricultural products, increasing on this basis economic intercourse with the capitalist world and utilizing the resources of western industrial countries to provide the initial technical equipment for peasant agriculture. Proceeding from this firm foundation, they would build up industry, step by step. This "agrarian" conception was evolved by such ideologists of the upper kulak groups as Professor Kondratyev, Albert Weinstein, Professor Makarov, and others. Their ideology also gained a foothold in certain groups within the Communist Party, as was particularly shown by the famous utterances of Shanin, who put forth very bluntly, on the eve of the XIV Party Congress, the outline of precisely this economic policy for the Soviet Union. It is perfectly obvious that these ideas reflected only the interests of the capitalist top of village society, the kulaks; and that they would inevitably lead to the helplessness of the Soviet Union in the face of the imperialist industrial countries. Thus they endanger the conquests of the October Revolution. That is why the XIV Congress of the Communist Party crushingly defeated those "agrarization" views and formulated a comprehensive industrialization program as the basic economic policy of the Soviet Union. Socialist industry, and it alone, is the leading factor in the development of the productive forces of the country. This is particularly true of the advance of agriculture. But if this is so, then the way of agricultural progress is not through capitalist farming; but through the socialist reorganization of peasant economy on the basis of large state farms, collectivization of the bulk of small and middle peasant holdings, the establishment of

* The concept of encouraging strong individual farming as a basis for securing the means for socialist industrialization in the cities, delaying the socialization of agriculture until a more or less indefinite future.—*Ed.*

machine and tractor stations, and so on. This is precisely the road followed by the Soviet economic policy.

Also of very great importance in defining the trend of Soviet economic development has been the struggle against Trotskyism, both theoretical and political. The Trotskyist attacks against the economic policies adopted by the Communist Party of the Soviet Union were supposed to have been dictated from a "Left" standpoint. It was alleged that the pace of industrialization as adopted was not fast enough, and that the resources of the peasantry were not being sufficiently utilized for purposes of industrialization. The Trotskyists came out as partisans of super-industrialization. It is in their group that Preobrazhensky's famous theory of the "law of primary socialist accumulation" originated; this treated the peasantry as a kind of colonial "hinterland" for the socialist city and socialist industrialization.

It is well known that the struggle against Trotskyism went on for a number of years and culminated, at the XV Congress of the Communist Party of the Soviet Union, in 1927, in a decisive defeat for its ideas as well as its organizational ventures.

What was it that the Communist Party was defending in the struggle with Trotskyism over the trend of economic policies and the industrialization of the country? Why were the demands of the Trotskyists for speeding the pace of industrialization unacceptable? The answer is obvious. The Communist Party in its struggle against Trotskyism was defending the integrity of the worker-peasant bloc, which, according to Lenin's teachings and the experience of proletarian revolutions, is essential to the preservation of the dictatorship of the proletariat; and, consequently, for socialist development in the U.S.S.R. While the Communist Party of the Soviet Union uncompromisingly rejects all attempts of the kulak ideologists of "agrarization" to force upon the country any other economic policy than that of socialist industrialization, it also combats, with no less energy, all Trotskyist or semi-Trotskyist tendencies toward super-industrialization, which ignore the importance of maintaining and strengthening the union between the proletariat and the poor and middle peas-

antry. Such division would mean finally the disarmament of the Soviet Union in the face of capitalism. It took the exceptionally ignorant correspondent of the *Rigaer Rundschau* (in his article for May 8, 1929) to describe the Five-Year Plan as a "struggle against the peasantry" and to define "its object" as that of "depriving the peasants of the fruits of their revolutionary conquests, and restoring large-scale land ownership in Communist hands." Truly there is no limit to human stupidity.

Finally, the Communist Party of the Soviet Union is at the present time combating the so-called Right deviation within its own ranks, and in economic construction generally. This struggle is closely and directly related to the problem of the trend of economic policy, the pace of socialist industrialization, and the tempo of socialist reorganization of peasant economy. The Right deviation is an opportunist movement. It regards the present pace of industrialization as decided upon, as too fast and as overtaxing the strength of the country. In matters of agricultural policy it vacillates between that of socialist reorganization, through the building up of state and collective farms, and that of encouraging strong individual farming. It underestimates the class resistance which the capitalist top of the peasantry is already carrying on against socialist industrialization and socialist reconstruction of village life. As regards the union between city and country, the Right Wing stubbornly sticks to the commercial form which was characteristic of the initial stage of the New Economic Policy. It underestimates the opportunities already available for organizing that union on the basis of production. It also fails to realize the influence which the new forms of city-country co-operation are bound to exert upon the entire trend of agricultural production and upon the social evolution of village life.

Like every opportunist trend in socialism, the Right Wing, through its vacillations, is inevitably and abjectively converted by conditions into a hindrance to the up-building of socialism and the strengthening of the proletarian dictatorship. It is hardly necessary to point out the danger of such tendencies concurrently

with the great efforts of socialist construction now under way in the Soviet Union, in spite of the desperate resistance of the capitalist elements within the country and the growing aggressiveness of the great imperialist powers. This is why the same XVI Conference of the Communist Party of the Soviet Union, which ratified the Five-Year Plan of economic development, also declared the struggle against the deviation to the Right to be an immediate practical task in the U.S.S.R.—the essential prerequisite for the success of the Five-Year Plan. This Plan of great works and of socialist advance along the whole front cannot be successfully carried out unless the opportunist Right Wing in the Communist Party and in Soviet political life is defeated and disarmed.

Thus we may conclude our necessarily brief introductory remarks on the general trend and the guiding ideas of economic development of the U.S.S.R. It is only in the light of these general principles of socialist construction that a correct view may be gained of the concrete facts, figures, estimates and calculations of the economic and cultural progress of the Soviet Union, to the consideration of which we now proceed.

CHAPTER IV

PROSPECTS OF INDUSTRIAL DEVELOPMENT

WE shall turn now to a consideration of the concrete prospects of industrial development in the U.S.S.R. in accordance with the general lines of Soviet economic policy referred to in a former chapter. To avoid mere gratuitous statements, we shall have to undertake an extended excursion into the various branches of Soviet industry and into the vast and numerous economic regions which compose the Soviet Union. This is the only way in which we will be enabled to visualize clearly and concretely the tremendous magnitude of the task of industrial development upon which the Soviet Union has embarked. First, however, it will be necessary to introduce the subject with a few general remarks which illustrate the way in which the general lines of economic policy are embodied in the actual plans for economic development.

1. GENERAL TRENDS OF CAPITAL INVESTMENTS IN THE NATIONAL ECONOMY

There is no better indication of the general nature of economic development than the trend of capital investments and the resulting changes in the organic composition of the basic capital of the country. It is for this reason that the pivotal part of the entire Five-Year Plan, which will make considerable progress in the conversion of the Soviet Union from a primarily agrarian into a predominantly industrial country, is the program of construction and the plan of capital investments. The extent and distribution of capital investments is the national economy as a whole; the resulting changes in the structure of the basic capital of the country; the establishment—on the basis of the capital investment policy—of a new inter-relation between industry and agriculture, between city and country, socialized and private

economy; and, finally, the nature of the technological methods to be applied during the course of capital construction, compose the cycle of problems which first present themselves in the general evaluation of the prospects for the industrial development of any country.

At this point it is necessary to check up on the correlation between the general politico-economic objectives and the computations as embodied in the concrete economic plans. A short time ago the Soviet Union completed five years of life and development without Lenin. These were the difficult years during which the process of economic rehabilitation was concluded and the first steps were taken toward the solution of the problems of reconstruction. A comparison between the rate and structure of the capital investments in the national economy for the elapsed five-year period, 1923-1924 to 1927-1928, inclusive, and that laid out (and already partly realized) for the five-year period between 1928-1929 and 1932-1933 is extremely enlightening. Such a comparison shows new forces and new potentialities arising in the U.S.S.R. The capital investments in the national economy expressed in the current prices of the respective years (i.e., taking into account the 50 per cent reduction in construction costs expected during the five-year period between 1928-1929 to 1932-1933) for the two periods are as follows:

CAPITAL INVESTMENTS IN THE U.S.S.R.

	1923-1924 to 1927-1928	1928-1929 to 1932-1933
	(billions of rubles)	
Total investments in the national economy	26.5	64.6 *
Of this amount, in		
Industry	4.4	16.4
Electrification (central electric stations only)	0.8	3.1
Transportation (including capital re- pairs)	2.7	10.0
Agriculture (including investment by the peasantry)	15.0	23.2

* Subsequent checking of the computations of the Five-Year Plan and the work upon the control figures of 1929-1930 shows that the general extent of capital investments during the five-year period, 1928-1929 to 1932-1933, will be considerably greater, chiefly on account of the extension of capital investments in industry and agriculture.

These figures are eloquent. They indicate the new and greatly increased scale of industrial development in the U.S.S.R.

It should be reiterated that the elapsed five-year period was occupied primarily with the solution of the problems of rehabilitation, barely making a start toward the reconstruction of the national economy. Whatever the specific difficulties of the elapsed period, it was faced with comparatively elementary and simple tasks, which were accomplished almost entirely on the foundation of the old basic capital of the country. New construction projects were neither numerous nor extensive. It is entirely different with regard to the new five-year period, the first year of which (1928-1929) has been concluded. Total capital investments will increase two and one-half times; investments in state industry, electrification, and transportation almost four times. Furthermore, the new five-year period comes in the initial and, therefore, the most difficult phase of the new construction period. Not only is the construction front immensely extending, not only is the number of construction projects rapidly growing, but the construction tasks themselves are becoming much more complicated. A great program of new construction and the immense tasks of rebuilding and re-equipping old establishments, which in most cases amounts practically to erecting them anew—mark the present five-year period. At this time almost the entire industrial output is coming from the old establishments. At the end of the five-year period, no less than 35 per cent of the entire industrial output of the country will come from newly constructed enterprises, not including those that have been almost entirely reconstructed and re-equipped.

The realization of this program of capital investments will bring about changes in the organic composition of the basic capital of the country, reflecting fully the trend of the development of the productive forces along the lines of socialist industrialization; *i.e.*, reflecting the general lines of Soviet economic policy. The following figures indicate clearly how the growth of the basic capital of industry and of central electric stations is outdistancing all other forms of basic capital. The basic capital in

the different divisions of the national economy is computed at 1925-1926 prices (in order to eliminate the effect of changes in the price level).

DISTRIBUTION OF BASIC CAPITAL IN THE U.S.S.R. BY INDUSTRIES

	1927-1928 (billions of rubles)	1932-1933	Ratio of 1932-33 to 1927-28 (percentages)
Total basic capital	70.2	127.8	182.1
Of this, in			
Industry	8.6	25.8	300.0
Central power plants.....	1.0	5.3	530.0
Railroad transportation...	10.1	16.9	167.4
Agriculture	28.7	38.9	135.5
Urban housing	13.1	18.5	141.0

This flow of the basic capital of the country, embodying as it does the Soviet economic policy, will at the end of the five-year period substantially change the organic composition of the basic capital by greatly increasing the relative importance or the share of industrial capital. The structure of the basic capital of the country is shown in the following table, giving its distribution among the major divisions of the national economy in percentages of the total, at the end of the respective years.

DISTRIBUTION OF BASIC CAPITAL IN THE U.S.S.R. BY INDUSTRIES

	1927-1928 (percentages)	1932-1933
Total basic capital	100.0	100.0
Of this, in		
Industry	14.0	22.8
Electrification (central electric stations)	1.4	4.1
Transportation	16.6	17.2
Agriculture	41.0	30.4
Urban housing	17.2	12.0
Other branches	9.8	13.5

This table shows quite clearly the trend toward industrialization and the strengthened position which industry is gaining within the Soviet economic system.

Finally, there is another structural index of decisive significance for the Soviet system—the distribution of the basic capital

of the country among the various social sectors of the national economy. The very fact that the share of the basic capital in state and co-operative industry is increasing, signifies the strengthening of the position of the socialized sector within the general economic structure of the country. The following changes are expected to take place within this five-year period in the relative shares of the respective social sectors in the total basic capital of the country.

DISTRIBUTION OF BASIC CAPITAL IN THE U.S.S.R. BY SOCIAL SECTORS *

	1927-1928	1932-1933
	(percentages)	
Total basic capital	100.0	100.0
State enterprises	51.0	63.6
Co-operative enterprises	1.7	5.3
Private enterprises	47.3	31.1

So much for the general trends of the rate of capital investments and the changes in the organic composition of the basic capital of the national economy. It is apparent that these trends correspond fully to the general course of Soviet economic policy, the fundamental theses of which were given in a preceding chapter. It is impossible to overestimate the significance of these changes, showing as they do the fundamental shiftings in the economic basis of the Soviet Union and marking an epochal milestone in the industrialization of the country.

Some general remarks should also be made concerning the policy of the U.S.S.R. with regard to technical methods and

* The latest available figures of new capital investments in socialized (state and coöperative) and private sectors are as follows:

<i>New Capital Investments</i>	<i>Socialized Industry</i> (millions of rubles)	<i>Private Industry</i> (millions of rubles)
1926-1927	1,270.	63.
1927-1928	1,614.	64.
1928-1929	2,046.	56.
1929-1930	4,275.	51.
Per cent change in 1929-1930 as compared with 1926-1927	235%	—19%

These figures indicate a much more rapid decline of the relative importance of the private sector in the national economy of the U.S.S.R. than originally contemplated by the Five-Year Plan.—*Ed.*

equipment. This very complicated and important subject demands separate treatment, including a consideration of all the technical questions involved. Here we wish to emphasize only those indices which are characteristic of the changes in the power utilization of the country and in the replacement of man-with mechanical-power. For it is precisely in this field, more than in any other, that the Soviet Union has lagged behind the advanced capitalist countries, and it is precisely here that gigantic strides must be made in order to accomplish the task of reaching and exceeding the level reached by the advanced modern capitalist countries. To be sure, the figures quoted below showing the available primary horsepower, are still quite low. The supply of primary horsepower is still much lower than that which such giants of capitalism as the United States already have at their disposal. In the United States the available mechanical horsepower per individual worker is eleven times as great as in the U.S.S.R. However, the indicated tempo of development in equipping labor with mechanical power is sufficient to guarantee the overcoming of this deficiency. The entire structure of the supply of primary horsepower in the U.S.S.R. in the present five-year period shows a definite trend in the direction of an increased importance for mechanical power in relation to the total power consumption; and an increased importance for electrical in relation to the total mechanical power. This substantially changes the problem of equipping man-power with mechanical power. The following basic index numbers speak for themselves:

MECHANICAL POWER IN MAJOR BRANCHES OF NATIONAL ECONOMY

	1927-1928	1932-1933	Ratio of 1932-1933 to 1927-1928 (in p.c.)
I. MANUFACTURING INDUSTRY (Census Industry)			
A. Man-Power			
1. Number of workers (thousands)...	2,602	3,250	124.9
2. Working hours per year per worker	1,953	1,794	91.9
3. Total number of man-hours (millions)	5,082	5,831	114.7

MECHANICAL POWER IN MAJOR BRANCHES OF NATIONAL ECONOMY—*Cont'd*

	1927-1928	1932-1933	Ratio of 1932-1933 to 1927-1928 (in p.c.)
B. Mechanical Power			
1. Capacity of all motors (thousands of kilowatts)	2,550	6,200	243.1
2. Total consumption of mechanical power (millions of kilowatts)...	6,300	15,200	241.3
Of this, in electric power (millions of kilowatts)	3,130	11,700	373.8
C. Ratio of Mechanical Power to Total Power Consumption			
1. Capacity of motors (number of kilo- watts per worker) .....	.98	1.91	194.8
2. Output of mechanical power per worker (kilowatt-hours)	1.24	2.61	210.5
Of this, in electric power (kilowatt-hours) .....	.62	2.10	324.2
3. Total output of mechanical power per worker (kilowatt-hours) ...	2,421	4,677	193.2
Of this, in electric power (kilowatt-hours)	1,203	3,600	299.3
II. RAILROAD TRANSPORTATION			
A. Man-Power			
1. Number of workers (thousands)...	992	960	96.8
2. Working hours per year per worker	1,950	1,925	98.7
3. Total number of man-hours (in millions)	1,935	1,850	95.6
B. Mechanical Power			
1. Capacity of all motors (thousands of kilowatts)	6,000	8,400	140.0
2. Total consumption of mechanical power (millions of kilowatts) ..	4,000	6,000	150.0
C. Ratio of Mechanical Power to Total Power Consumption			
1. Capacity of motors (number of kilowatts per worker)	6.0	8.8	146.7
2. Output of mechanical power per man-hour (kilowatt-hours)	2.60	3.24	157.3
3. Total consumption of mechanical power per worker (kilowatt- hours)	4,032	6,250	155.0
III. AGRICULTURE			
A. Man-Power			
1. Number of workers (millions)	64,700	70,300	108.7
B. Other Power (exclusive of man-power)			
1. Draft animals (billions of kilowatt- hours)	19.20	22.30	116.1

MECHANICAL POWER IN MAJOR BRANCHES OF NATIONAL ECONOMY—*Cont'd*

	1927-1928	1932-1933	Ratio of 1932-1933 to 1927-1928 (in p.c.)
2. Mechanical power (billions of kilowatt-hours)	1.745	5.20	289.0
a. In land cultivation.....	.71	3.24	456.3
b. In cottage industry	1.035	1.96	189.4
Of this, in electric power.....	.035	.21	600.0
Total other power	20.945	27.50	131.3
C. Ratio of Mechanical Power to Total Power Consumption			
1. Total animal and mechanical power per worker (kilowatt-hours)....	324.0	391.0	120.7
Of this, in total mechanical power	27.0	74.0	274.1
Of this, in electric power....	.54	3.0	555.6

The extensive industrial construction which is discussed below is, in the final analysis, really devoted to the solution of the problem of increasing the mechanical power available for labor in every division of industrial and agricultural activity.

A characteristic and extremely important feature of the policy of the U.S.S.R. with regard to technical methods and equipment is the definite tendency toward erection of huge electro-chemical-metallurgical combines and, in general, to an extensive consolidation of industries, provided always that methods of utmost specialization, standardization and mass production are applied. These gigantic industrial enterprises embody at once the most advanced technical achievements and, what is even more important, the great advantages of organized and planned economy. The nationalization of land and mineral resources and the socialist character of the industrial construction open up opportunities here for rational and planned organization of consolidated industrial enterprises which are entirely out of the range of capitalist society. The consolidated electro-chemical-metallurgical plant at Dnieprostroy; the combined coal, coke, metallurgical and chemical works in the Donetz Basin; a similar, but even more extensive consolidation of plants in the Ural region (where there are available, in addition to coal, iron, chemicals, timber and non-ferrous metals); the erection of an immense consolidated electro-

chemical plant in the Central Industrial Region, which will receive its power supply from the Bobrikov central power plant—these are only the most significant milestones on the new road of technical development which the national economy of the U.S.S.R. has entered.

Equally, and not merely from the social, but also from the technological point of view, great significance must be attached to the trend of agricultural policy and the plans laid down for agricultural reconstruction during the coming five-year period. The extended development of immense mechanized state farms, collective farms, and tractor stations in the regions of extensive agriculture, the organization of large-scale production of those industrial crops which, until now, were handled exclusively by scattered small holdings; the extensive program of irrigation and reclamation, are all expressions of a policy which will lead agriculture to a new technical level—a pioneering policy which has no analogy in the history of the world, and which puts its stamp on the entire process of economic construction.

In the field of transportation and communication, the trend of technical development is toward an automobile industry, airway transportation, radio and telephone communication, etc. In this field as well as in all other branches of economy the country faces the task of a large scale adoption of the most modern means of transportation and communication. This task is of especially great significance for the U.S.S.R. with its vast, almost endless stretches of territory.

For the purposes of this discussion, these general remarks about the nature of the present policy of the U.S.S.R. with regard to technical methods and equipment are sufficient. The outlines of this policy will become more definite as we learn more about the concrete program of construction in the most important branches of industry as well as in the other divisions of national economy.

2. GENERAL TREND OF INVESTMENTS IN SOCIALIST INDUSTRY AND THE RATE OF INDUSTRIAL DEVELOPMENT

As already indicated, the determining factor of socialist industrialization at the present stage of economic development of the U.S.S.R. is the energetic and accelerated extension of the production of means of production. This is the only course open to the U.S.S.R. if she is to safeguard her independence in the face of the capitalist world, and if she is really to assure to industry a leading part in the socialist reconstruction of the entire national economy. This determines the general direction and nature of capital investments in the whole of state industry.

According to the Five-Year Plan, the total amount of capital investments in large-scale state industry, *i.e.*, in industry regulated by the Supreme Economic Council, is to be 13.5 billion rubles * (assuming a fifty per cent reduction in the cost of building materials). Of this total amount, group "A," *i.e.*, producers' goods industries, or heavy industry, is to absorb about 10 billion rubles; another 600 million rubles is to go for the organization of research and geological exploration, and group "B," *i.e.*, industries producing consumers' goods, will take slightly less than 3 billion rubles. Thus more than 75 per cent of all capital investments in industrial production is to go into heavy industry.

The expenditures on state electrification, *i.e.*, for the erection of regional electric power stations and high tension transmission lines during the five-year period, are to reach a total of over 3 billion rubles. The grand total of capital investments in large-scale state industry, including electrification, but exclusive of small-scale production, which supplies about 30 per cent of all consumers' goods, will accordingly reach about 17 billion rubles. Quite plainly, the entire increase in capital investments for the purpose of electrification should really be put down to the ac-

* The indications are that this sum will be invested in four years instead of five; the allotment for 1929-1930 has been raised from 2.3 to 3.9 billion rubles.—*Ed.*

count of heavy industry. Thus, slightly less than 40 per cent of all capital investments assigned for the socialized sector of the national economy will go to industry, raising its "specific weight" or share in the basic capital of the country from 14 per cent at the beginning of the period to 23 per cent at its end.

So much for the computations of the Five-Year Plan. But there is already available the experience of the first year, 1928-1929, as well as the "control figures" (operating plan) for 1929-1930, the second year of the period. According to the control figures, the total amount of capital investments in state industry and electrification is to amount in 1929-1930 to 4.3 billion rubles, as against the 2.7 billion rubles contemplated by the Five-Year Plan. In other words, the capital investments in state industry during the second year of the five-year period will exceed by almost 1.6 billion rubles the amount projected by the Five-Year Plan.

This provides food for thought for all those who, with a zeal worthy of a better cause, have filled the bourgeois press of Europe with a clamor about the alleged fantastic computations of the Five-Year Plan, its alleged artificially inflated indices, etc. On the contrary, the maximum, or as they are usually called, the "optimum" figures of the Five-Year Plan, proved to be below the actual tempo of construction as it is being carried on in real life. It follows that the general amount of capital investments in state industry during the five-year period will be substantially greater than the amount indicated above, but it would be premature at this time to venture any guess as to the extent by which it will be exceeded. It is enough to say that whatever the excess of capital investment may be, it will be directed mainly toward the further strengthening of the position of heavy industry.

This tempo and trend of capital investments in industry is closely tied up with the production tasks assigned to industry. We shall take up these tasks in greater and more concrete detail later in connection with the analysis of the development plans

for each of the several branches of large-scale industry. It is enough to note here that the output (weighted to eliminate the effect of price fluctuations) of large-scale state industry is to increase during the five-year period 2.6 times, while the output of large-scale industry subject to regulation by the Supreme Economic Council is to increase about three times. In other words, the annual increase of industrial production is fixed by the Five-Year Plan at an average of about 20 per cent. Here, again, it will be illuminating to consider the Plan in the light of the experience of its first and second years. The year 1928-1929 is completed with an increase in industrial production, not of 21.4 per cent as contemplated by the Plan, but of 23.4 per cent. The calculations of the Five-Year Plan were based on a 21.5 per cent increase in the industrial output during 1929-1930. But the control figures of the national economy, *i.e.*, the economic plan of operations for 1929-1930, which were drawn up on the basis of all additional investigations and computations, provide for a growth of industrial output of over 32 per cent. So life checks the figures fixed by the Five-Year Plan, which, again, is worthy of careful consideration by our numerous critics and opponents.

Why has the program of the Five-Year Plan been thus surpassed? In the first place, the party and the Soviet Government made all their computations with the greatest caution, and the organizations charged with projecting the work were even more circumspect, bending perhaps a little too much to the side of conservatism. In addition, new forces and factors—the ever growing eagerness on the part of the toiling masses—have entered into the arena of economic construction in the Soviet Union. As a method of stimulating creative effort within the socialized sector, the rising wave of socialist rivalry has shown itself to be richer in positive results, even at this early stage, than could possibly have been expected. In the third place, at the initiative of the delegates to the V All-Union Congress of Soviets, it was decided to adopt a régime of continuous produc-

tion * in all branches of state industry and administration. This makes possible not only a superior utilization of the basic capital of industry, but also the reduction of the operations of plants using obsolete or deteriorated equipment. It also paves the way for securing a greater reduction in the cost of production, a more rapid elimination of the goods famine, unemployment, etc.

Finally, no little significance must be attached to the exposure and liquidation of counter-revolutionary sabotaging organizations in some branches of Soviet industry. As was shown during the trial of the Donetz Basin mining engineers—which was made the pretext for brazen demonstrations against the Soviet Union in which the Social-Democracy of Western Europe shamefully joined hands with the bourgeoisie—the sabotaging efforts of the counter-revolutionists, coming from the ranks of those intellectuals who were among the highest technical personnel, consisted mainly in intentional underestimation of the productive capacity of the available basic capital, in unreasonable and wasteful direction of capital investments, and in disarranging the general course of the productive processes of the country.

It is hardly necessary to emphasize the enormous significance, both theoretical and practical, of an annual growth of industrial production ranging between 20 and 30 per cent, and of the development of the productive forces and the welfare of the masses. The attainment of such a rate of growth for industrial production during the first and most difficult phase of the reconstruction period, when many key projects have been barely started and many more are not yet in operation, supplies incontrovertible evidence of the immense potentialities of planned economy organized on socialist principles. No capitalist country, however powerful, can cite a single case in its economic history of a similar rate of economic development, especially in the field of industry. Even less was any such rate of development ever known to Russia under the Tsars, when the increase in

* An uninterrupted work-week with the rest days arranged on a stagger system. By April, 1930, over 1.5 million workers, or 63.4 per cent of the total in large-scale industry were employed on a 7-hour day under the continuous, 5-day week.—*Ed.*

industrial production never (even in periods of industrial expansion after years of depression) exceeded 10 per cent per annum.

To be sure, the tasks of industrial development in the U.S.S.R. cannot be measured on a merely quantitative basis, nor solely by the rate of growth of industrial output. They are also determined by the quality of the industrial output and the cost of production. The Five-Year Plan has, as one of its basic problems, the urgent necessity of securing a systematic and continuous improvement of quality in all branches of industrial production. Another fundamental task of the Five-Year Plan, to the solution of which all other questions of industrial development must be subordinated, is the reduction of production costs by no less than 35 per cent during the five-year period. It is well known that industrial production costs are substantially higher in the Soviet Union than in the advanced capitalist countries. This condition arises not only from the general industrial backwardness of the Soviet Union: it is also a result of the different attitude toward the working class, wages and other obligations of industry to labor as compared with that of capitalist countries. But be that as it may, the problem of lowering production costs by at least 35 per cent, and in connection therewith, of prices on manufactured goods by not less than 25 per cent during the five-year period, is one of the most important and decisive tasks in the industrial development of the U.S.S.R.

These are some of the more general introductory observations regarding the trend of industrial development and capital investments in the Soviet Union. But only a study of the concrete production and construction tasks in each of the major branches of Soviet industry will enable us to form a true conception of the great tempo, size and difficulties of the industrial development carried on in the U.S.S.R.

3. STATE ELECTRIFICATION

Reference has already been made to the prominent position held by the problem of power in general, and of electrification

in particular, in Soviet economy. It is not accidental that the Soviets' first great project of industrial development was the ten-year electrification plan. Nor is it merely accidental that in the present plan of economic development the power program and the plan for the erection of central state and regional electric stations take such a leading part.

The capacity of all the electric stations of the country at the beginning of the five-year period, *i.e.*, at the beginning of 1928-1929, amounted to 1.7 million kilowatts. Of this the state and regional electric stations accounted for slightly more than 500,000 kilowatts. These central regional electric stations are entirely a product of the Soviet régime and of Lenin's electrification plan.

The total production of electric power during 1927-1928 amounted to 5.1 billion kilowatt-hours,* out of which about 2 billion were produced by central electric stations. From this modest beginning, the electrification program starts on the course mapped out for it by the Five-Year Plan. It is hardly necessary to emphasize how greatly the Soviet Union lags behind the advanced countries of modern capitalism in this field, nor how really enormous are the problems it faces in order to liquidate this backwardness and to insure for electrification a decisive part in the country's total supply of primary power.

If we take into account the projected development of the national economy under the Five-Year Plan, and the proportion of electrical to the total supply of available primary industrial power, it becomes plain that the supply of electrical power must reach at least 22 billion kilowatt-hours at the end of the period; and that of the regional power stations 15 billion kilowatt-hours.

The experience gained during the work on the economic plan for 1929-1930, *i.e.*, for the second year of the period, shows that the Five-Year Plan was prepared with great, perhaps even too great, circumspection, and that the actual course of economic development is proceeding at a quicker tempo than that contemplated by the Plan. As has already been pointed out, indus-

* In 1928-1929 power production was 6.47 billion kilowatt-hours, of which central stations produced 2.4 billion.—*Ed.*

trial output is to increase by more than 32 per cent in 1929-1930 as against the 21 per cent contemplated by the Five-Year Plan, while capital investments in industry alone will amount to 3.9 billion rubles instead of the 2.3 billion rubles slated for the year when the Plan was drawn up. Construction is accelerated and the tempo of economic development increased. This can only lead to a further extension of the program of electrification and electric power production.

It will, accordingly, be no exaggeration to say that the total output of electric power should increase by the end of this five-year period by about 5 times. So much for the scope and difficulty of the task, the accomplishment of which demands that the capacity of the state and regional central electric stations of the Soviet Union be increased from 500,000 kilowatts at the beginning of the period to a minimum of 3 million kilowatts, according to the original computations (but more probably to 4 million kilowatts) at the end of the present period. More than 40 huge central electric stations will be under construction and most of them will be completed and put in operation during this five-year period. Correspondingly, the total length of high voltage transmission lines in the Soviet Union will increase during the five-year period from the present 3,000 kilometers to 13,000-15,000 kilometers, indicating an unswerving course toward the concentration of power production and the centralization of the supply of electric current to industrial establishments from regional power stations.*

The total basic capital of the central electric stations in existence in the Soviet Union at the beginning of the five-year period was estimated at about a billion rubles, making up only 1.4 per cent of the total basic capital of the country. The execution of the program of electrification as laid down in the Five-Year Plan will require an investment for the construction of

* It is worthy of note that although the present output of electric current in the U.S.S.R. is only 5 per cent of that in the U.S.A., the Soviet Union already has under construction electric power stations with a capacity of 4.5 million kilowatts as compared with a 7-million kilowatt capacity of the stations under construction in the U.S.A.

regional electric stations of over 3 billion rubles, exclusive of the billion rubles to be expended for the construction of industrial power plants, raising the amount of the total basic capital of the central electric power plants to 4 billion rubles and of all power plants to 5 billion rubles. The proportion of fixed capital invested in the production of electric power will increase to 4.1 per cent. But even at this time it is apparent that reality will surpass these calculations.

The investments in electrification will reach approximately 25 or 30 per cent of the total amount of all capital investments in industry, thus insuring that correlation which is the minimum necessary to serve industrial production with electrical power according to modern standards. Let us repeat. The experience of the first year and the carefully detailed program for the second year of the five-year period furnish incontrovertible proof that the program mapped out for the development of the production and supply of electric current will prove to be an underestimation rather than an overestimation and will, according to all indications, be surpassed.

It is also essential to consider the distribution of the program of electrification over the vast territory of the Soviet Union.* Only a concrete description of the distribution of electrical construction (as well as of other branches of industrial development) over the country can enable one to understand how wide a front is covered by the economic advance of the U.S.S.R. This distribution is also important from the point of view of the fuel problem of the U.S.S.R. and, in particular, from that of drawing the so-called local fuels into the general economic operations of the country. These local fuels will in the future have to play a constantly increasing part in our fuel supply.

In its briefest outline the geographical distribution of electrical development may be summarized as follows:

The Central Industrial region, i.e., the Moscow manufacturing district, with its numerous large-scale metal, machine-building and textile establishments, its extensive handicraft production

* See map of distribution of electric power plants on p. 340.—*Ed.*

and extensive agriculture, is scheduled to increase the capacity of its electric stations during the present five years from 280,000 kilowatts in 1929-1930 to a million at the end of the period. Even at this rapid rate electrification in the Moscow district will hardly keep pace with industrial development. In regard to fuel supply the characteristic feature of this development lies in the fact that, of the total increase of 720,000 kilowatts in the capacity of the electrical power stations, almost two-thirds will depend upon the peat deposits near Moscow for fuel, while only one-third will be based on the exploitation of the coal deposits of the Moscow district. Thus, 750,000 kilowatts, or three-quarters of the total projected capacity of the electric stations of the Central Industrial Region, will employ fuel resources now idle—peat bogs and low grade coal deposits near Moscow. It should be added that the technical problems of utilizing these fuels may be considered as having been solved in a fairly satisfactory manner.

The outstanding projects in the development program for the Central Industrial Region are:

- (a) the erection of two central steam electric stations in Moscow, with a capacity of 80,000 kilowatts;
- (b) the extension of the capacity of the recently constructed Kashira station from 12,000 to 150,000 or 250,000 kilowatts;
- (c) construction of an electric power plant at Bobrikov, the fuel supply for which is to consist entirely of the neighboring Moscow coal, with an initial capacity of 150,000 kilowatts and an ultimate capacity of 300,000 kilowatts;
- (d) increasing the capacity of the Shatura power plant from 92,000 to 136,000 kilowatts;
- (e) extending the capacity of the Moscow municipal electric stations from 100,000 to 200,000 kilowatts;
- (f) completion of the great Ivanovo-Voznesensk electric station, with a capacity of 90,000 kilowatts;
- (g) extension of the Balakhna station near Nizhni-Novgorod to a capacity of 150,000 kilowatts.

In addition, work will probably be started during the period on a large power plant utilizing peat, at Tver.

The Leningrad region, with its highly developed fine machine-building, ship-building, textile, chemical and other industries, is scheduled to increase the capacity of its electric stations from 200,000 kilowatts, at the beginning of the present period, to about 500,000 kilowatts at its end. It should not be overlooked that in pre-revolutionary times Leningrad depended for its fuel supply on coal imported, primarily, from Great Britain. Even to a greater extent than the Central Industrial Region, Leningrad suffers from the long haul involved in supplying coal from the Donetz Basin. Therefore, the problem of developing the production of electric power in the Leningrad region from local fuel sources is one of the most difficult as well as one of the most important economic tasks of the Soviet Union.

The extension of the capacity of the electric stations of the Leningrad region under the provisions of the Plan will be accomplished by means of:

(a) increasing the capacity of the Krasny Oktyabr station from 20,000 to 110,000 kilowatts;

(b) extending the municipal electric power plant capacity from 84,000 to 140,000 kilowatts;

(c) constructing two central steam electric stations with a capacity of 50,000 kilowatts;

(d) erecting a great hydro-electric power plant on the Svir River with an initial capacity of 150,000 kilowatts.

Even so, the Leningrad region is bound to experience a serious shortage in the supply of electric power. This condition not only eliminates any thought of a reduction in the program of electrification, it also means that every possible effort must be made to increase its tempo. There is no doubt that a more rapid pace of electrification than projected will actually occur.

The Ukraine, malicious slanders of the White Guards of the Petlura and similar groups to the contrary notwithstanding, will be the scene of a mighty general industrial development, and particularly of an extensive electrification program during the

five-year period. The capacity of the existing Ukrainian central electric stations is estimated at the insignificant total of 20,000 kilowatts (exclusive, however, of the rather large number of power plants at industrial establishments). At the end of the five-year period the capacity of the regional electric power stations, including the powerful Dnieprostroy hydro-electric station with its initial capacity of 330,000 kilowatts, alone will total 656,000 kilowatts. These concise but impressive figures bear more effective testimony than any long-winded argument to the real trend and tempo of the industrial development of the Ukraine.

The section presenting the greatest difficulties in regard to electric power supply, not merely in the Ukraine, but in the entire Soviet Union, is the Donetz Basin, which will practically double its output of coal and rapidly develop its metallurgical, chemical and metal-working industries. At present, the aggregate capacity of all power plants of the Donetz Basin (including industrial plant installations) is estimated at 190,000 kilowatts, to be increased by the end of the five years to a minimum of 380,000 kilowatts. The capacity of the recently erected Shtetrovka plant will be extended from 20,000 to 150,000 kilowatts. At the same time a new plant will be built at Zuyeva with a capacity of 100,000 kilowatts. It is also planned to inter-connect the transmission lines of the electric power stations of the Dnieprostroy and the Donetz Basin, *i.e.*, to merge the power resources of these two giants of Soviet industry. In addition to the power development in this mining and metallurgical district, there will be completed in the Ukraine during this period two other central electric power plants, one in Kharkov with a capacity of 66,000 kilowatts, and another in Kiev with a capacity of 44,000 kilowatts.

The Ural region, with its high grade iron ores, its non-ferrous metals, and its chemical and forest-product industries, has at present an insignificant electrical power capacity. Yet enormous tasks have been assigned to it in the way of production and general development. The Ural is accordingly one of the most important, difficult and strategic sections with regard to electrifi-

cation. The Five-Year Plan provides for the erection in this region of the Chelyabinsk electric power plant with a capacity of 120,000 kilowatts, the extension of the Kiselev electric station to a capacity of 66,000 kilowatts, the construction of an electric power plant in the Central Ural district, with a capacity of 50,000 kilowatts, to use peat or the flue gases from the furnaces of the metallurgical plants; and, finally, work which will probably be started on the erection of a large hydro-electric station at the confluence of the Kama and Pechora Rivers, with a capacity of 150,000 kilowatts. The very difficult and complex problems of modernizing the Ural industrial region can be solved only on the basis of the outlined electrification program. The actual trend of industrial development and the urgent production tasks assigned by the country to the Urals, will in all probability force a more rapid expansion, both in the general industrial development and in the electrification program, than that which the Five-Year Plan provides for the region.

The Northern Caucasus region, with its center at Rostov, embracing the vast and rich agricultural districts of the Kuban and the northern slopes of the Caucasian mountain range, which is one of the richest sections of extensive agriculture, also enters the present five-year period with an extensive program for electrification. At present this region has no central electric power plants. At the end of the period the aggregate capacity of such power plants will amount to 200,000 kilowatts. Of this the Shakhtinska power plant will supply 66,000 kilowatts; the Nesvietayev station in the eastern part of the Donetz Basin, 44,000 kilowatts; the Baksan hydro-electric plant, 25,000 kilowatts; the Kisel-Don hydro-electric station, 22,000 kilowatts, and the Krasnodar and Novorossisk regional electric stations, 22,000 kilowatts each. This accelerated electrification of such a predominantly agricultural region as the Northern Caucasus is linked, on the one hand, with the development of the chemical industry, the manufacture of agricultural machinery and manufacturing industries using agricultural raw materials; and, on the other, with the tasks of socialist reconstruction of the agriculture of

the region. At the beginning of the Civil War the region was called the "Russian Vendée."* At present it is carrying to realization the building of large-scale socialist grain factories as well as extensive collectivization.

The Central and Lower Volga regions will be marked in the present five-year period by relatively slight electrification. Here will be constructed the Stalingrad electric power plant with a capacity of 66,000 kilowatts. The capacity of the Saratov plant will be doubled, and it is more than probable that another, with a capacity of 75,000 kilowatts, will be constructed if it should prove economically feasible to utilize the shale resources as fuel. The modesty of this program of electrification on the Volga is explained by the fact that so far no solution has been found for the fuel problem in this economic region, rich as it is in all other respects. There is no doubt that in the perspective of further development this great peasant river will see great industrial works rising on its banks. The Stalingrad tractor plant,** the Nizhni-Novgorod automobile works and the Nizhni-Novgorod paper mill are the milestones already erected to mark this approaching development. But final realization of this perspective development will take place only when the Volga-Don canal, to be started during this five-year period, will have been constructed, making the rich fuel resources of the eastern anthracite zone of the Donetz Basin available to the Volga region through cheap water transportation.

For *Siberia*, with its inexhaustible natural resources and its immense reserves of black and white coal, a comparatively modest program of electrification has been set. It embraces the erection of only two electric power stations in the Kuznetz Basin, with a capacity of 44,000 kilowatts each. The mighty Siberian rivers would themselves be able to supply water power for many million

* During the French Revolution the peasantry of the Vendée under the influence of the clergy and the nobles supported the counter-revolutionary movement. The White Armies of General Denikin and other monarchist leaders operated in the Northern Caucasus with the Don region as their center for a period of time during the Civil War.—*Ed.*

** The Stalingrad tractor plant was completed at the beginning of June, 1930, and the first tractor was run off the conveyor on June 17.—*Ed.*

kilowatts. The immense Kuznetz Basin, whose coal reserves exceed by almost five times those of the Donetz Basin, also constitute an inexhaustible source of power, not merely for Siberia but for a considerable part of the entire Soviet Union. But the large-scale industrial development of this region and, accordingly, its more extensive electrification, is beyond the boundaries of the present period.

The Republics of Central Asia, bordering on China, Afghanistan and Persia and composing the cotton belt of the Soviet Union, will erect during this five-year period, a number of small electric power plants with an aggregate capacity of 50,000 kilowatts. These installations will be linked mainly with the irrigation projects of this region.

Transcaucasia will more than double the present capacity of its electric stations (practically all of which are hydro-electric developments on mountain rivers), raising it to over 200,000 kilowatts. The most interesting developments here will be: the Rion electric station near Kutais, with a capacity of 40,000 kilowatts, which is being constructed primarily for the purpose of electrifying the section of the Tiflis-Batum railroad crossing the mountain summit of Suram; the Dsoragat electric power plant (20,000 kilowatts) in the Armenian mountains. This latter station together with those of Kanakir (20,000 kilowatts), Leninakan and Erivan will make up the so-called electric ring of Armenia. Let those Armenian and Georgian émigrés, who never tire of making tearful appeals to the League of Nations concerning the alleged oppression and ruin of Transcaucasia by the Bolsheviks, speak now!

These are the major regional projects of electrification in the U.S.S.R. during this five-year period. Side by side with the powerful centers of electric power development in the great old industrial regions of the Soviet Union, the first pioneer steps will also be taken in the new economic regions which are only now starting on the road to industrialization. Provided this program of construction in the field of electrification is carried out—and the experience of the first two years indicates that it will

be surpassed—the share of electric power production in the total fuel consumption of the country will increase from 9.5 per cent at the beginning of the five-year period to 20 per cent at its end, while state industry will be electrified to a very large extent.

No one in the Soviet Union is blind to the great difficulties involved in the realization of this program of electrification. But the toiling masses of the Soviet Union have understood deeply the teachings of Lenin, conceiving electrification as an absolutely necessary prerequisite for the industrialization of the country and the building of a socialist economic system. The country therefore struggles for every electric station as for a decisive outpost of its economic and cultural development.

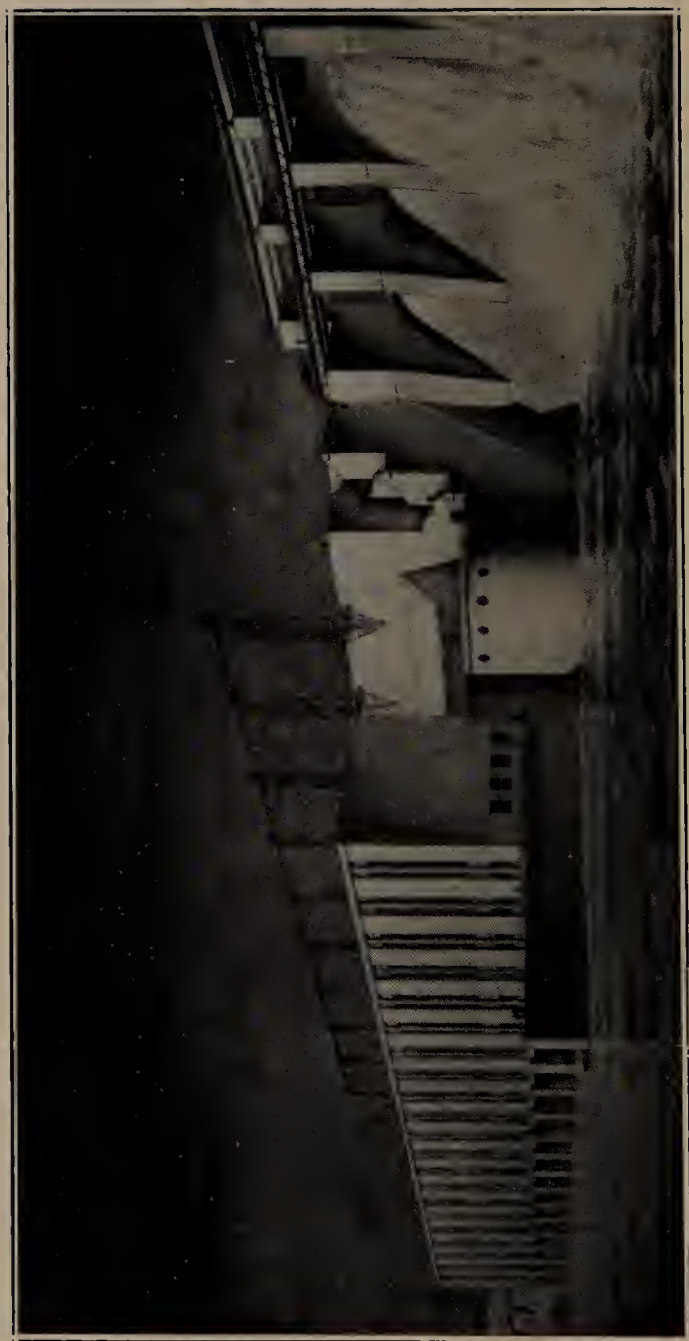
4. FUEL

Closely bound up with the problems of electrification are the tasks of the fuel industries, and particularly of coal. At the present stage of its productive capacity when such an immense coal field as the Kuznetz Basin of Siberia has not yet been very largely drawn into the whole concert of economic operations of the country, the Soviet Union is experiencing a certain strain with regard to its fuel supply. Great attention is therefore devoted to the problems of the fuel industry. A contributing factor lies in the fact that so great an industrial region as that of Leningrad, which before the war operated on imported coal, primarily British, now depends on domestic fuel brought chiefly from the Donetz Basin. It should also be noted that the two greatest coal basins in the country—the Donetz in the Ukraine and the Siberian Kuznetz—are at considerable distances from such chief industrial centers as Moscow, Leningrad and the Urals. Finally, hampering the solution of the fuel problems of the Soviet Union are the virtual non-utilization of oil as a fuel in industry and transportation, and the substantial depletion of forest resources near the industrial regions.

The task of supplying the rapidly growing industry, transportation and municipal public utilities with fuel, and above all,



The Shterovka Electric Power Plant in the Donetz Basin in the Ukrainian Soviet Republic (see p. 76).



Model of the Dnieper Hydro-Electric Power Plant, part of the Dnieprostroy (see pp. 70-79) .

with coal, during the present five-year period presents the utmost difficulties and demands the closest attention. A thorough appreciation of these difficulties is basic in the principles which guide both the development of the coal mining industry and the calculations for fuel supply and coal output during this period. However, the greatest difficulty here is not so much with regard to the total supply over the entire five years, as it is for the middle years. Still fresh in memory is the case of the sorry knights of the Donetz Basin, who directed all their policy of sabotage toward undermining the fuel supply of the country, for, say, 1930-1931, at which time they figured the intervention of the capitalist world in the Soviet Union would take place. The Five-Year Plan, however, provides sufficient assurance that even in these intermediary years, any capitalist intervention will find the Soviet Union with an adequate fuel supply.

To make sure of this fuel base for the Five-Year Plan of economic development by the utilization of domestic fuel resources only, and at the same time to provide for the accumulation of the necessary fuel reserves, it is imperative that energetic measures be taken with a view of meeting three fundamental conditions:

In the first place, Soviet industry and transportation will have to put their boiler room equipment in order and drastically reduce their fuel costs. The obsolete construction and physical deterioration of the boilers involve a waste of fuel which is fully appreciated by the leading industrial and economic agencies, as well as by the rank and file workers in industry and transportation. The fuel consumption per unit of output will have to be reduced accordingly on all fronts, and by at least 30 per cent in industry and 15 per cent in transportation. This will bring about substantial savings in the fuel supply of the country.

However, this alone will not suffice to adequately strengthen the fuel base for industry, transportation and other divisions of the national economy.

It will also be necessary to carry out in coal mining,

developments which by their proportions and their tempo will exceed anything heretofore known to the Soviet coal industry (or, for that matter, to any other coal fields).

Finally, taking into consideration the rather unfavorable geographical distribution of the important coal deposits of the country with regard to the industrial centers, it is necessary to tackle immediately and with the greatest energy the problem of making available the local fuels (local low grade coals, peat, shale, slate coal, etc.) for the needs of the national economy.

The solution of the fuel problem of the Soviet Union during the present period lies in these three directions.

The structure of the total fuel consumption for industrial and technical purposes (exclusive of wood for domestic fuel) during the five-year period is as follows:

FUEL CONSUMPTION IN THE U.S.S.R. *				
Type of fuel	1927-1928		1932-1933	
	Quantity	Per cent of total (units of standard fuel)*	Quantity	Per cent of total (units of standard fuel)*
Wood (millions of cubic meters)	50.34	17.6	58.5	11.4
Peat (millions of tons)	5.53	4.8	14.4	7.1
Coal (millions of tons)	34.86	59.4	70.6	65.3
(a) Donetz Basin..	26.88	48.4	48.4	49.2
(b) Other Basins ..	7.55	11.0	20.2	16.1
Crude Oil (millions of tons)	7.92	18.2	12.8	16.2
Total for all fuels (millions of tons of standard fuels)*	55.74	100.0	100.3	100.0

The relative importance of wood and oil in the total fuel consumption will thus be considerably reduced, that of peat will

* This total has been obtained by expressing quantities of the several fuels in standard fuel equivalents. One kilogram of standard fuel is equivalent to 7,000 calories.—*Ed.*

be increased, and that of coal will grow substantially. It is especially significant that coal from the Donetz Basin will continue to gain in importance, notwithstanding the large expansion of the coal production of other fields. The Donetz Basin will continue to be the fuel base of the Soviet Union up to the time when a great current of coal from the Kuznetz Basin, whose reserves are almost five times as large as those of the Donetz Basin, will flow into the stream of the industrial life of the country. This, however, will occur after the end of the five-year period under consideration. During the present period the Kuznetz coal can become a fuel base for the industrial development of the Urals only.

To keep pace with the planned progress of the national economy in general, and of industry and transportation in particular, the progress of fuel production for this period assumes the following general outline:

FUEL PRODUCTION IN THE U.S.S.R.

Type of fuels	Annual Production		Per cent of 1932-1933 to
	1927-1928	1932-1933	1927-1928
Wood (millions of cubic meters)	50.5	59.8	118.2
Peat (millions of tons).....	7.2	16.0*	222.0*
Coal, Total Production (millions of tons)	35.5	75.3 **	212.1
(a) Donetz Basin	27.3	52.5	193.7
(b) Other Basins	8.2	22.8	278.0
Crude Oil, total output (millions of tons)	11.7	21.7 ***	185.0
Fuel Oil (millions of tons)....	8.3	12.5	152.0
Total (millions of tons of st. fuel)	57.6	105.3	182.8

* The program for 1932-1933 has since been increased to 33 million tons, *i. e.*, to 458 per cent of the output in 1927-1928.—*Ed.*

** The program for 1932-1933 has since been increased to 140 million tons or 394 per cent of 1927-1928 output.—*Ed.*

*** The program for 1932-1933 has since been increased to 40 million tons or 341.8 per cent of the 1927-1928 output.—*Ed.*

COAL. We have already referred to the general trend in the distribution of the coal production quotas among the various coal fields of the Soviet Union. It will, however, still be worth while to look into the question in greater detail. The table below shows the tasks with regard to the output of coal assigned to each of the coal basins during the present five-year period:

COAL PRODUCTION IN THE U.S.S.R. BY DISTRICTS *

Coal Fields	1927-1928		1932-1933	
	Production (million tons)	Per cent of total	Production (million tons)	Per cent of total
Donetz Basin ...	27.26	77.0	52.5	70.1
Kuznetz Basin ..	2.46	7.0	6.0	8.0
Ural	2.00	5.6	6.1	8.1
Moscow Dist. ...	1.18	3.3	4.2	5.6
East. Siberia	1.91	5.4	4.0	5.3
Central Asia ...	0.23	0.7	1.0	1.3
Caucasus.....	0.11	0.3	0.6	0.8
All Other	0.25	0.7	0.6	0.8
Total U.S.S.R.	35.40	100.0	75.0	100.0

This determines the program of development in the coal mining industry. During the five-year period the total capital investments in coal mining, according to the plan, will amount to 1.25 billion rubles, of which three-fourths will go to the Donetz Basin, in order that it may maintain its position as the chief fuel source in the Soviet Union. Consideration should also be given to the construction tasks in the several coal fields in order that we may be in a position to fully evaluate the perspective rapid development of the fuel industry in the very brief term set for it.

* While the figures in this table present the quotas for the individual coal basins fixed by the original Five-Year Plan, which have since been practically doubled, they still represent with sufficient accuracy the relative importance of the several coal fields.—*Ed.*

The Donetz Basin. The first place is of course taken by the Donetz Basin. This district is confronted with the great task of increasing its output from 27 million tons in 1927-1928 to 52 million tons in 1932-1933.*

Like a terrific hurricane the years of civil war carried destruction over the Donetz Basin, bordering on the Kuban steppes and the slopes of the Northern Caucasus. The Donetz Basin passed from hand to hand more than once in the struggle between the Red and White armies. The machinery of production in this giant coal field was broken to pieces. Until 1927 a counter-revolutionary band of saboteurs continued to find a nest for themselves within the production apparatus of this Basin. All this notwithstanding, the Donetz Basin succeeded, under the leadership of the Soviet Government, in surpassing the pre-war output; and it now has undertaken the task of doubling its coal production during this five-year period, shouldering the great responsibility of supplying industry and transportation with their black bread.

The mines now in operation in the Donetz Basin, together with the 17 new large shafts recently sunk, will at the end of the five-year period have a total capacity of 41 million tons, exclusive of whatever additional output may be secured as a result of the introduction of the continuous working week. It is estimated that the development of large mines demands from three to five years and of medium-sized mines from two to three years. Under these conditions, it will be necessary to carry through an immense construction program, if the necessary fuel supply is to be assured for the present period, and if the necessary preparatory steps for the solution of the even greater problems of fuel supply during the following five-year period are to be taken. In the first place, the work that has already been started on the 17 large mines must be carried out. Also, beginning with 1929-1930, it has been necessary to start sinking a series of large new

* Since the program of the total coal production for 1932-1933 has been substantially increased the program for the Donetz Basin has been increased accordingly to over 70 million tons.—*Ed.*

shafts, having an annual capacity of 8 million tons, at the rate of ten or twelve a year; so that at the end of the period there will be no less than 50 large mines in various stages of development and equipment.

The task, however, does not end here. During the present five years it is necessary to complete the mechanization of at least 75 per cent of the entire coal production of the Donetz Basin, so that the efficiency of its production methods may be brought, at the very least, to the level of the richest coal basins in the world. In addition, some solution must be found for the problem of insuring an adequate water supply for the Donetz Basin; and an immense housing program must be carried out so that the last vestiges of the barbarous housing conditions that capitalism had forced upon the Donetz miners may be wiped from the face of the earth. Finally, the prospecting of coal deposits in the Donetz Basin must be carried on with redoubled energy.

The output of Donetz coal will practically double during these five years. The basic capital of the industry will increase by 1.025 billion rubles, and in addition it will be entirely modernized. Most of the coal output will be mechanized, and the mines equipped with the best coal cutting machines, scrapers, etc., to lighten the labor of the Donetz miner. The capacity of the Donetz Basin electric power plant will be doubled and high tension transmission lines will connect it with a reliable source of power, such as the Dnieprostroy. The very faces of the towns and villages in the Donetz Basin will be changed. Almost no other coal field in the world has carried through such an enormous program of construction and development in so short a time.

The Donetz Basin and the mighty army of Donetz miners wrote many glorious pages in the history of the civil war, during the struggle to assure the power of the Soviets. With all that, their program of peaceful construction involves no less heroism, no less inspiring grandeur. Nevertheless, it is commonly understood in the Soviet Union that this is a minimum program, absolutely essential to insure the present tempo of industrial

development; and that it will doubtless be surpassed by the actual performance.

The Kuznetz and Ural Fields. The next place in this review of the coal mining industry of the U.S.S.R. belongs to that sleeping giant, the Kuznetz Basin in Siberia. Its coal reserve, as mentioned above, is estimated at 300 billion tons, or five times that of the Donetz Basin. But this immense coal field is still far removed from the highway of industrial life in the Soviet Union. During the present five-year period the Kuznetz Basin will hardly take a first step in the direction of its future great development. But even in the present perspective, the Kuznetz Basin and the Ural region may and should be considered as a single fuel-producing unit, more as a single and consolidated industrial combine. The Ural region, so far as is indicated by exploration to the present time, possesses relatively insignificant coal reserves, which in themselves could not serve as a fuel base for the development of the mines and quarries of this, the largest metallurgical region in the Soviet Union. The fate of the metal industries in the Ural rests on the development of the coal mining industry of the Kuznetz Basin and with the development of means of transportation to span the 2,000 kilometers separating the Ural from the Kuznetz Basin.

To the present five-year period has been assigned the task of increasing the coal output of the Ural region from 2 to 6 million tons; and of the Kuznetz Basin from 2.5 to 6 million tons. However insignificant the tonnages provided by the plan may be when considered in absolute figures, they still involve a program of construction unparalleled in the history of these regions, and imply an even greater proportionate effort than the incomparably more extensive program of the Donetz Basin. Twenty new mines in the Urals, including eight large ones, eight new large mines in the Kuznetz Basin: this is a pioneer rate of construction in these sections. About 100 million rubles must be invested in each of these districts during the present five-year period. As far as the Ural region is concerned, this will involve substantial mobilization of the rather modest coal resources so far discov-

ered there. For the development of the vast coal fields of the Kuznetz Basin, however, it will signify a bare beginning, which will gain its real momentum only during the next five-year period.

The Moscow Coal Basin. The coal fields of the Moscow District come next. Here are large reserves of comparatively low grade coal which is even now beginning to play an important part in the electrification of the Moscow industrial region, and may become of even greater importance for the further development of electric power production, as well as for the chemical and manufactured gas industries of this region. Reference already has been made to the fact that the substantial contemplated extension of electrical production in the Central Industrial Region will depend largely on this coal for its fuel supply. Under the Five-Year Plan the annual output of this basin will increase from a million to 4 or 5 million tons. For this purpose it will be necessary to open about six new large mines entirely differing in their construction from that of the present small and semi-primitive mines of the district. The total capital investment involved will amount to about 50 million rubles.

Coal in the Border Lands. So much for the major tasks in the development of coal mining during the present period. But coal is still to be found in a number of other places in the Soviet Union. The prospects of coal development beyond this period are therefore much larger than indicated above. Mention should be made of the coal reserves in the following sections: the Far East; the Cheremkhov District in Siberia; the Central Asiatic coal deposits, which may become a source of fuel supply for the southern section of the Turkestan-Siberian railroad and for the transportation facilities of Central Asia, in general; Tkvarcheli and Tkvibuli in Transcaucasia, which may be utilized for working the ores of the Kerch mines in the Crimea, and, should the present prospecting show favorable results, also for working the ores of the Dashkesan district of Transcaucasia. However unimportant, when considered separately, all these may be, they are, when taken in the aggregate, not without significance for

the entire national economy. And they will certainly gain in importance as the economic development of the country progresses.

The total amount of capital investments in these coal fields is estimated at 60 million rubles.

PEAT. The above outline of the construction tasks and tendencies for the coal mining industry of the Soviet Union during the present period should be supplemented by a review of the contemplated progress in the utilization of peat. The Central Industrial Region, the Leningrad, Ural and White Russian districts, as well as many other sections suffering from a lack of other fuels, possess enormous peat reserves—about 75 per cent of the world's total. It is well known the genius of Lenin was much occupied with the problem of using peat as a fuel, especially for industry; and the Soviet Union has already made substantial progress in the production of peat. Some powerful electric stations built in recent years by the Soviet Government are working successfully and economically with peat as fuel. The work of the State Peat Institute, formed after the October Revolution, has received honorable mention from the International Power Congress.

Quite naturally the Five-Year Plan contains an impressive program of peat production. Under its provisions the output of this material is being increased from 5.5 million tons in 1927-1928 to 18 or 20 million tons in 1932-1933. And even this plan has since been expanded. The peat production program has now progressed to a total of 33 million tons for 1932-1933. A number of the powerful electric power plants in the Central Industrial Region, Leningrad and the Ural, will depend on peat as their basic fuel. It has already been noted that two-thirds of the 800,000 kilowatt power increase to be developed by the plants of the Moscow industrial district will be produced from peat. Such rapid progress in the production and utilization of this fuel emphasizes the necessity for greatly extending the peat market by briquetting, distillation, etc.

The aggregate of capital investments in the peat industry

during the present period is to reach about 200 million rubles.

PETROLEUM. It is hardly possible to consider the general problems of Soviet fuel apart from those of the oil industry. How greatly—and with what good reason—oil agitates international interest is well known. The known oil reserves of the U.S.S.R., already estimated at about 37 per cent of the world's total, are extended by discovery every year. It is enough to mention here the discoveries made in the Ural region after the Five-Year Plan for the petroleum industry had already been ratified. Soviet oil plays a considerable part in the international market: it has a wonderful magnetic attraction for powerful capitalist combinations and political groupings.

The program of development for the petroleum industry has been prepared with the view of increasing crude oil production from 11.7 million tons in 1927-1928 to 22 million tons in 1932-1933 according to the original Five-Year Plan, and to 26 million tons according to a later upward revision of the plan.* The total output of crude oil will thus be more than trebled during the present five years. In addition, a further improvement in the methods of exploitation is provided. If the preceding period was distinguished by the thorough rationalization of petroleum extraction on purely American lines, the present five years are charged with the complete reconstruction of oil refining. The capacity of the petroleum refineries will be more than doubled. The recently completed Baku-Batum and Tuapse-Grozny pipe lines will be given an increased capacity and two new lines are scheduled for construction. Of these, the Emba-Samara pipe line, approximately 600 kilometers long, will almost certainly be finished, as seems probable in the case of the Astrakhan-Moscow line. The cracking method of fuel oil refining, new to the Soviet Union, is gaining a firm hold in the industry, and 55 powerful and modern cracking plants will be established during the five-year period.

This development will involve a capital investment in the petroleum industry of no less than 1.5 billion rubles, according

* A more recent decision increases the program to 40 million tons.—*Ed.*

to the original plan. If we take into consideration the latest upward revision of the production program, the required investment must be substantially increased.

Realization of this program in the petroleum industry will make it possible to insure a high rate of progress for crude oil production and refining and a relationship between them that will give effective expression to the continued rationalization of this extremely important sector on the industrialization front of the Soviet Union. The most important stages of this development may be summarized in the following table (though it does not take account of subsequent upward revisions), which has about doubled the five-year program of petroleum production:

PETROLEUM PRODUCTION IN THE U.S.S.R.

Product	1927-1928	1932-1933	Per cent of 1932-1933 to 1927-1928
1. Production (millions of tons)			
(a) Crude oil	11.4	20.8	181.5
(b) Natural gas	0.3	0.9	333.5
Total	11.7	21.7	185.2
2. Refining Operations (millions of tons)			
(a) Crude oil	8.7	19.1	219.5
(b) Fuel oil	1.7	8.4	494.1
3. Consumed as fuel by oil industry and lost in refining (millions of tons).....	1.8	3.3	183.4
4. Commercial output by major divisions (millions of tons)			
(a) Motor fuels for automobiles, airplanes, tractors, etc.	1.8	6.1	332.5
(b) Refined products other than fuel (illuminating oil, lubricants, etc.)..	2.7	4.8	177.8
(c) Fuel Oil	5.4	7.5	139.9
Total commercial output (millions of tons).....	9.9	18.4	185.7
Value of commercial output (millions of rubles).....	275.0	645.3	234.5
Average cost per ton (in rubles)	27.7	35.0	126.5

The above table speaks for itself. It shows a much more rapid rate of progress for the refining of crude oil and especially of fuel oils (by the cracking process) than for the total output of crude oil, thus reducing the relative importance of oil as a fuel for industry and transportation, but increasing the importance of oil in the export trade of the country.

It is now possible to sum up the prospects of the fuel industry as a whole. This sector of the industrial development front of the Soviet Union, as mapped out in the Five-Year Plan, presents the following major features:

The production of coal was, under the original Plan, to have been increased from 40 to 75 million tons. Under the newly revised program, however, it will reach 140 million tons. In addition coal mining will be thoroughly mechanized and the exploitation of some new coal basins, including the mammoth Kuznetz Basin, started. The output of crude oil will be nearly quadrupled and the most improved methods of oil refining put into operation. The production of peat will be increased six times. New investments in the basic capital of the fuel industry will reach 2.7 billion rubles.* Finally, the relative importance of mineral fuel in the total fuel supply of the country will be substantially increased. Yet at the end of this period the total fuel production of the Soviet Union will still be rather slight as compared with an advanced industrial country such as the United States. But the pace set for the production and preparation of solid and liquid mineral fuels, the great construction program in this field, the nature of the Soviet technological policy and, finally, the huge reserves of mineral fuels available within the Soviet Union, make it very plain that the development already outlined represents only the beginning of the advance. In the future we can expect to see the U.S.S.R. attain and even surpass the leading capitalist countries.

The first two years of the five-year period indicate that the program of development in the fuel industry is being carried out successfully in all of its divisions. In 1928-1929 the coal out-

* According to calculations of the original Five-Year Plan.—*Ed.*

put reached about 40 million tons—slightly less than was contemplated under the Five-Year Plan. The control figures for the operations of 1929-1930 (fixed on the basis of a more extensive experience and more complete information, and the increasing needs of the national economy) provide for the production of 51.6 million tons of coal as compared with the 46.1 million contemplated by the Five-Year Plan. The corresponding figures for crude oil are 16.2 million tons and 14.8 million tons.*

So much for the trend of actual output. The capital investments fully correspond to the production tasks. During 1928-1929 166 million rubles were invested in the coal mining industry, and the amount to be invested in 1929-1930 will reach 268 million rubles. The corresponding investment figures for the petroleum industry are 216 and 286 million rubles. In both cases the actual investments exceeded the amounts originally fixed by the Five-Year Plan.

5. METALS AND MACHINERY

The accomplishment of the tasks set for the power and fuel industries clears the way for approaching the solution of the most formidable and decisive problem in the immediate future of the Soviet Union. It will supply the essential preliminary conditions for accelerating the production of metals and machinery.

It is not accidental that the stage of development attained by modern industrial countries is gauged primarily by the condition of their metallurgical and machine-building industries. Nor that the political, economic and public attention of the Soviet Union is so intensely and actively concentrated upon the problems of metals and machinery. Metallurgy and machine-building represent that link in the chain of development in the Soviet Union upon the strengthening of which the most strenuous efforts and immense resources will be concentrated under the Five-Year Plan.

* In the first half of 1929-1930, the coal output was 25 per cent greater and the oil output 20 per cent greater than in the first half of 1928-1929.
—*Ed.*

It is not without significance that out of the total of 13.5 billion rubles to be invested in all industry under the Five-Year Plan, over 4 billion rubles are to be invested in the metal and machine industries. In other words, metals and machinery will receive a greater share of the new capital than any other, not even excepting electrification. This large proportion of capital investments has been set for the metal and machine-building industries because of the necessity for rapid increase of metal production, so that at the end of the five-year period the output of pig iron may reach at least 10 million tons, as against 3.3 million tons at the beginning of the period. However, the experience of 1928-1929 and the control figures for the operating year 1929-1930 make possible a considerable upward revision in this program. The latest revision of the program provides for a total of 17 billion tons for 1932-1933. The capital investments for the metal and machine-building industry as a whole have been increased for 1929-1930 from the originally contemplated 670 million rubles to over 1,157 million rubles.

Thus, on this decisive sector of the economic front, as well as on the others, the actual progress is in advance of the computations of the Plan. This should be emphasized especially for the benefit of those pessimistic and tireless critics of the Soviet economic system who can express nothing but hopelessness or denunciation for the Five-Year Plan.

Iron and Steel. The problems of iron and steel take first place. During the present five-year period their solution will be effected in two ways. The existing iron and steel mills in both basic metallurgical regions of the country (the Ukraine and the Urals) will be thoroughly rebuilt and re-equipped and new plants will be erected. In addition, the metallurgical front will be extended to cover such new regions as the Kerch Peninsula in the Crimea and the Kuznetz Basin in Siberia, already referred to in connection with the coal mining industry, and the Lipetsk district in the Central Black Soil Belt.

Close attention is paid by the Soviet Union to the progress of the American and European metal industries. The post-war

experience in Germany, which is closely followed by the entire world, furnishes conclusive proof that the output of metal producing plants may be substantially increased by means of more careful attention to such processes in the preliminary stages of production, as ore concentration, proper selection of coke, and improved preparation of the furnace charge generally. The application of these improved methods, the value of which has now been conclusively established, combined with the reconstruction of the existing metal mills, will make it possible to increase their output during the last year of this five-year period to 8 million tons. Of this, almost 6 millions will be produced by the powerful Yugostal Trust, the important industrial consolidation of the iron and steel industry of the Ukraine. It is reasonable to expect that the capacity of the existing plants will prove in reality to be greater than indicated and that their actual output at the end of this period will considerably more than double their present output.

This, to be sure, is not an easy task to accomplish. It will demand extensive and radical reconstruction of these plants. The Yugostal Trust alone will have to erect 12 or 15 new blast furnaces with an annual capacity of 200,000 tons each in the Ukraine, and will in addition have to carry through a general reconstruction of the plants involved, in order to bring them up to the level of the increased furnace capacity. For the Urals the extension of the production program means the erection, in the existing plants, of about 10 new blast furnaces of a type hitherto entirely unknown to the backward metal industry of the Urals, and with an annual capacity of 180,000 tons each. This reconstruction of the existing metal mills, including the necessary expansion of ore mining and the organization of coke production, will involve a capital investment of slightly over a billion rubles, of which about three-fourths will go to the Ukraine and one-fourth to the Urals.*

* As shown by the experience of 1929-1930, the capital investments may reach a substantially higher figure, while the construction plans and projects are now undergoing thorough and upward revision, with the co-operation of American experts.

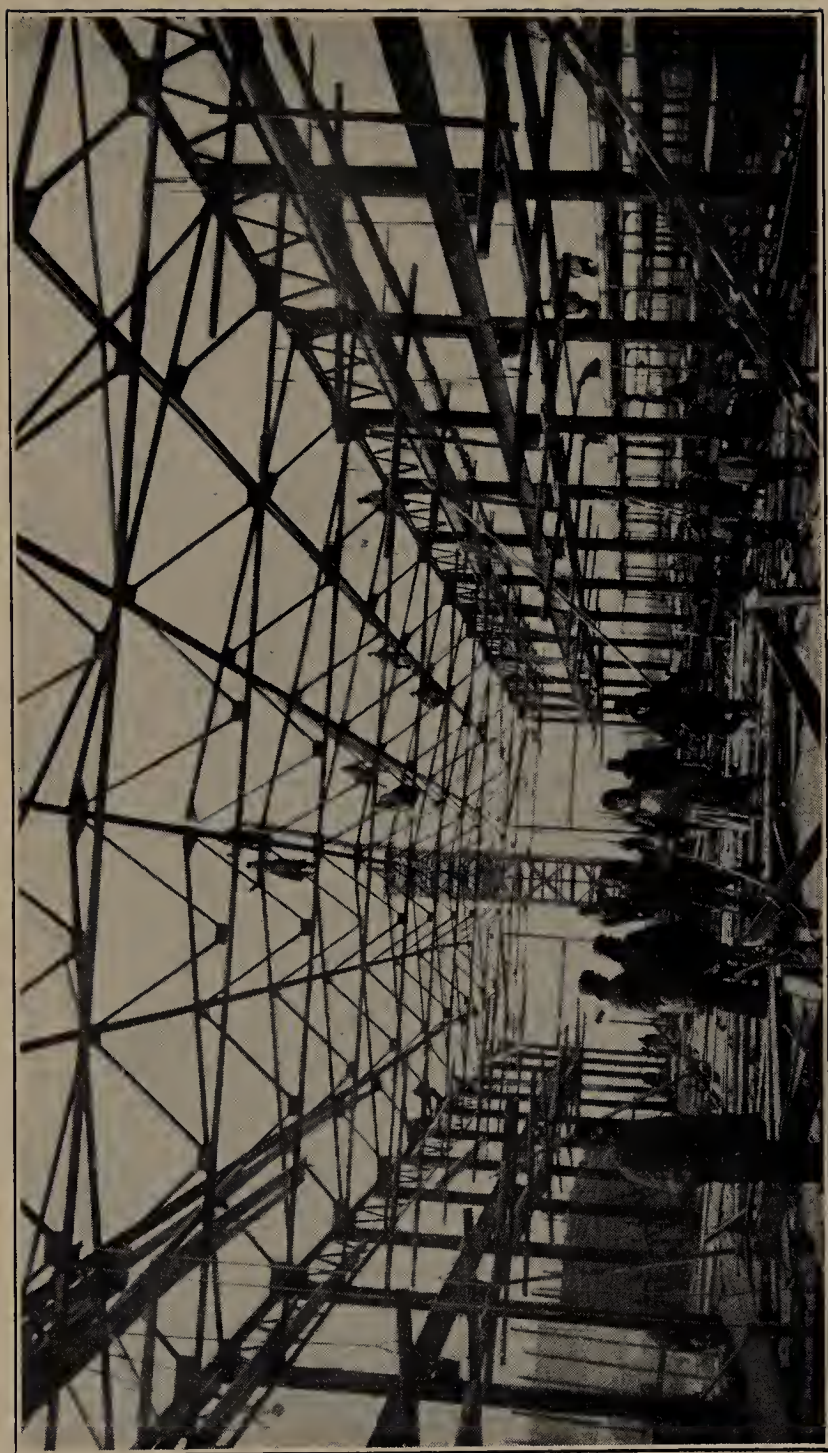
Here is food for thought for the turbulent Ukrainian White émigrés who, during this period of unprecedented development of Ukrainian industry, still keep on repeating the tale of the alleged semi-colonial position of the Ukraine within the Soviet Union.

The acute shortage of iron and steel in the Soviet Union makes this plan of extensive reconstruction within the existing mills especially difficult. It will have to be carried out in the face of a condition which makes suspension of work for any very considerable time impossible. Only under a planning system which does away with the barriers and divisions of private economic interests, implying the most extensive co-operation among industrial establishments, and admitting the greatest flexibility in the utilization of the basic capital within the unified national economy, is it possible to carry out such a radical reconstruction while the wheels of industry are kept turning.

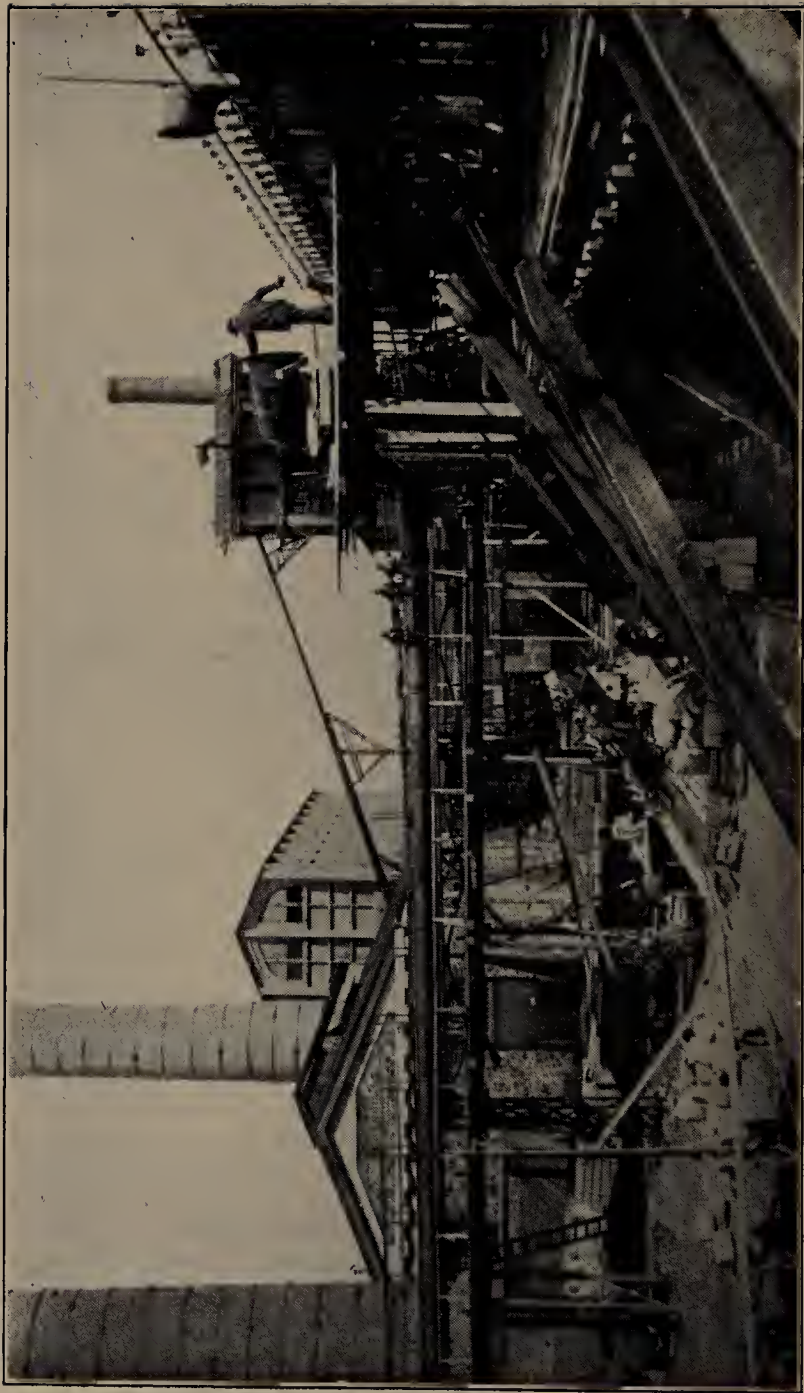
In any case, this very complex and inspiring enterprise will require a plan so extensive and carefully worked out as to assume the proportions of a great scientific and technical problem, as well as the most skillful administrative supervision.

The recently established State Institute for Designing Metal Plants, the so-called *Gipromez*, is already becoming a substantial scientific-technical organization, toward which gravitates the engineering thought, not merely of the Soviet Union, but also of some of the advanced capitalist industrial countries. Scores of first class foreign engineers are engaged at work in the *Gipromez*, *Giproshakht* (State Institute for Designing New Mines), *Electrostroy* (Power Plant Central Bureau), etc., in the capacity of consultants, designers, etc. The staffs of foreign engineers who are devoting their energies to planning new metal-producing enterprises and the reconstruction of the existing metal plants will undoubtedly find here a field for the application of their technical experience far more extensive than anything that can possibly be offered by any capitalist trust.

The reconstruction of the existing steel mills will take care of the country's supply of metals during the present five-year



Machine and Assembly Shop of the Stalingrad Tractor Plant Under Construction, December 23, 1929. Completed February 15, 1930 (see pp. 78, 105).



Laying a New Gas Pipe to a Battery of Coke at the Kemerovo Chemical Works in Siberia (see pp. 80, 110).

period. The erection of new plants, now begun, will at least partially determine the progress to be made in supplying the country with metals through the succeeding five-year period. It falls to the lot of the present period to accomplish the historic task of partly putting into operation, and partly preparing for later operation, a series of mammoth metal plants. Only with these new plants in operation will it be possible to maintain the proper pace in the country's advance toward complete industrialization. This explains why the Five-Year Plan appropriates such huge funds for the erection of new metal mills. The appropriation for this purpose greatly exceeds, indeed, that made for the reconstruction of the entire system of the existing metal plants of the country.

The Five-Year Plan for new construction in the metal industry was originally based on the adoption of a standard type of steel mill with an annual capacity of 650,000 tons—greater than any now existing in the Soviet Union. It is now proposed, however, to start immediate construction of one or more gigantic mills with a capacity of 2 to 3 million tons. The project for the Magnitogorsk plant in the Ural has been revised to increase its capacity to 2.5 million tons. Similar upward revisions are now being made in the plans for the Ukrainian steel mills at Zaporozhiye and Krivoy Rog. New milestones are being erected here to mark the way of technical progress in the Soviet Union.

The general observations concerning the development of the iron and steel industry in the Soviet Union during the present five-year period pave the way for the consideration of the interesting problems of the distribution of the metal mills throughout the country. It will be found that in addition to the rapid development of the southern metallurgical region, an exceptionally accelerated rate of growth has been set for the eastern region, particularly the Ural.

The distribution of new steel mills is interesting because it illustrates the possibility of great degrees of co-operation among the various economic regions, and of a type of consolidation of industrial production as was entirely unknown to pre-revolu-

tionary Russia which is possible only on the basis of the nationalization of industry and a planning system that covers the entire national economy.

Think of the *Ural-Kuznetz* industrial combination, based on supplying the Ural region with Siberian coke and supplying Siberia with Ural ore; think of the pooling of the *Kerch-Tkvarcheli* industries through which the Tkvarcheli coal, shipped by the cheap water route from Transcaucasia, will be utilized to develop the cheap Kerch ores.

The following specific projects of new construction in the iron and steel industry may be considered as definitely fixed for this five-year period:

(a) The *Kerch* group, with a total capacity of 750,000 tons a year and an aggregate cost of about 150 million rubles. During the present period the output is to reach 350,000 tons.

(b) The *Ukrainian* group, including the mills at Krivoy Rog and Zaporozhiye, each with an annual production of 650,000 to 1.1 million tons, at a total cost of 300 million rubles; and a third large metal mill (with an annual capacity of 650,000 tons). The planning for these mills is now engaging the best engineering thought of the Ukraine.

(c) The *Ural* group, including the Magnitogorsk mill, with an annual capacity of 2.5 million tons, which is now in the course of accelerated construction; the Alapayevsk plant with a capacity of from 650,000 to 1.1 million tons and several other mills at Zlatoust, Balashev, Tavda, etc.

(d) The *Siberian* group, consisting of the Kuznetz plant,* the construction of which is now being accelerated, which will have an annual capacity of 350,000 tons and cost 130 million rubles; and a small metal mill in the Far East.

(e) Finally, the *Central* group, including the Lipetsk plant in the Moscow industrial district, with an annual capacity of 650,000 tons and at a cost of 180 million rubles, and the Khopersk plant, in the Central Black Soil Belt, with a similar

* The Kuznetz plant will have a capacity of a million tons, and together with a power plant and workers' housing will cost about 300 million rubles.—*Ed.*

capacity. The projects for this group, however, still require some additional technical and economic planning.

This new construction in the metal industry is made the basis of the vast program for the machine-building industry. Its new coke plants and blast furnaces will also make possible an accelerated development in the chemical industry. It may, therefore, justly be considered as one of the most vital and difficult divisions of the entire construction program under the Five-Year Plan, especially since all the conditions of the tempestuous economic development of the Soviet Union demand that the building of the new metal plants be completed within the shortest possible time. For this reason, in order to achieve the utmost acceleration of this construction, the Soviet Government has considered it advisable to approve an operating program for 1929-1930 (only the second year of this five-year period) which will practically double the new capital to be invested, according to the original plan, in the metal industry during the year.

A perusal of the Soviet press will easily show what close, even loving attention, the widest circles of the Soviet public lavish on every project for the construction of new metallurgical plants or the reconstruction of the existing plants. The press reports of this construction and reconstruction remind one of the communications from the most critical sections of the battle front during the war.

Non-Ferrous Metals. The pace set for the development of the production of non-ferrous metals is even more greatly accelerated. The following brief table eloquently tells the story:

PRODUCTION OF NON-FERROUS METALS UNDER THE FIVE-YEAR PLAN

Production in thousands of tons

Metal	1927-1928	1932-1933 (original plan)	1932-1933 (revised plan)
Copper	28.3	150.0	185.0 *
Zinc	3.15	125.0	135.0
Lead	2.9	100.0	125.0
Aluminum .....	.....	20.0	20.6

* Plus 150,000 tons from secondary metals.—*Ed.*

It is hardly necessary to emphasize the fact that we are dealing here with a new, but very important industry in the Soviet Union. The program for the production of non-ferrous metals is dependent on the execution of construction plans of great scope and complexity, which will involve a total capital investment of about 800 million rubles.

MACHINERY. The machine building industry of the Soviet Union has made rapid strides in recent years and has greatly surpassed the extremely low position it occupied in pre-revolutionary Russia. But what has so far been accomplished is a mere beginning in terms of the momentous tasks still ahead of the machine building industry. To a considerable extent, these tasks are to be tackled during the present five-year period. The machine building industry forms the pivot upon which rests the solution of the major task: the raising of the productivity of labor in all branches of agriculture and industry by means of equipping the workers with the necessary mechanical power. Upon the progress of this industry likewise depends the speed with which the U.S.S.R. may become self-sufficient and independent of the capitalist countries, or, in any case, considerably less dependent upon them than at present.

The problems of socialist industrialization present many acute and complex questions precisely with regard to the development of machine construction. As early as at the XIV Congress of the Communist Party of the Soviet Union these questions were the subject of a heated discussion between the adherents of the agrarian conception, represented among others by the former Commissar of Finance, Sokolnikov, and those favoring a policy of vigorous industrialization, during which Stalin forcibly called the attention of the Party and the country to this "foundation and basis of our general policy." He said:

We have to organize the industrial workers so that their thoughts and aspirations may be concentrated on this very problem: transformation of our land from a country importing machinery and equipment into a country manufacturing such machinery and equipment. In the solution of this problem lies the only assurance of the

economic independence of our country. Here is the assurance that our country is not to be converted into a mere appendage of the capitalist countries.

It is for this reason that in addition to the capital investments in the metal producing industries referred to above, the Five-Year Plan also provides for an outlay of over a billion rubles on capital construction in the machine building industry. In this case again, the control figures for the operating year of 1929-1930 are considerably in advance of the original computations of the Five-Year Plan.

Boilers. The trend of development of machine construction in the U.S.S.R. is determined, in the first place, by the condition and the requirements of power production. According to the most conservative estimates, nearly one-half of the boiler resources of Soviet industry, *i.e.*, about 800,000 square meters of heating surface, are both obsolete and deteriorated. In addition, about one-half of all the motors in industry, about 700,000 horsepower, are also obsolete and partly deteriorated. To this should be added the new and continually growing demand for power generating equipment arising from the general economic progress and the industrialization of the country. Under these circumstances it is imperative to develop the boiler construction industry on a large scale and to raise it to a modern technical level. The metal works in Leningrad, the Parostroy in Moscow, and the boiler plant at Taganrog, are specializing in this direction; and by the end of this five-year period they will supply 70 per cent of the total production of boilers. The output of boilers is to increase during this five-year period from 114,000 square meters of heating surface in 1927-1928 to 300,000 square meters in 1932-1933.

Diesel Engines. The construction of Diesel engines will be greatly accelerated and will increase from 65,900 horse-power at the beginning of this period to 202,000 horse-power at its end. This production will be largely concentrated in three plants: the Kolomna, the Russky Diesel at Leningrad, and the Sormovo

plant, which together will account for 70 per cent of the total output of Diesel engines.

Turbines. The construction of turbines will have its base at the Leningrad Metal Works, which is to increase its output from 60,000 kilowatts capacity at the beginning of this five-year period to 650,000 kilowatts at its end.

Machine Tools. Machine tool construction is to a certain extent linked up with the above subdivisions of the machine building industry. The development of the machine tool industry will be taken care of by enlarging the present centers of machine tool production, the Sverdlov plant in Leningrad, the Krasny Proletary in Moscow, the Dvigatel Revolutsii in Nizhni-Novgorod and the Kramator plant. In addition a number of smaller plants will be rebuilt and specialized, and some new plants will be erected in the Ukraine, the Central Industrial Region and, possibly, in the Ural district. The capital investment involved in this planned development of machine tool construction is estimated at 25 million rubles, for new plants only.

Mining Machinery. Another important factor determining the development of the machine building industry is the demand of the mining regions (the Southern, the Ural and the Siberian) for highly specialized equipment, which must usually be made to order to meet individual specifications. To supply this demand, the Five-Year Plan provides for the practically complete rebuilding of the Kramator machinery plant in the Donetz Basin at a cost of 45 million rubles, and the completion of the work on the erection of the heavy machinery plant at Sverdlov in the Urals, at a total cost of about 50 million rubles.

The execution of these projects will result in a proper distribution of the basic centers of heavy machine construction throughout the country. It will do away with the disadvantages of long hauls, and insure the rationalization of mining, which must be accomplished in order to maintain the pace in coal and iron ore production, and in the production of non-ferrous metals, including gold, etc.

Locomotives. The factor next in importance in determining the

course of the machine building industry within the present five-year period is transportation, which must be reorganized and developed. In the succeeding pages the program for building the transportation system, including the demand it will create for such products of the metal industry as locomotives, cars, and automatic couplings, will be considered at some length. In accordance with this program, provisions have been made for the reconstruction of the existing locomotive works, which will involve an aggregate investment during the present five-year period of up to 100 million rubles. The pivotal point of this program is the reconstruction of the Lugansk locomotive plant in the Donetz Basin. Nearly 40 million rubles will be invested in this project. The output of the Lugansk plant will reach 350 high powered locomotives in the last of the present five years. Only toward the end of the period will the question of the large scale reconstruction of another locomotive plant be considered, with a view toward increasing its output to 500 locomotives a year.

Railway Cars. The car building program will be carried out mainly by means of the reconstruction, already taking place, of existing plants. However, there will also be put in operation the car building department of the Dnieprovsk plant, the complete rebuilding of which is now proceeding, and a new car building plant at Nizhni Tagil. The production of heavy freight cars will be concentrated in these two latter plants. The total capital investment in the car building industry is estimated at 160 million rubles.

In order to prepare for the introduction of the automatic coupling of railroad cars, it will be necessary to erect, at a total cost of from 30 to 50 million rubles, one or two plants for the production of automatic couplings. In all probability, these plant will be constructed in the Ukraine and the Urals.

Shipbuilding. The construction of seagoing vessels and river boats may also be considered as part of that subdivision of machine building which caters to the needs of transportation.

Under the Five-Year Plan the shipbuilding industry will absorb a total capital investment of 82 million rubles.

Automobiles. Greater emphasis must be put on the tasks connected with the development of the automobile industry. The Five-Year Plan originally provided for the erection of an automobile plant in Nizhni-Novgorod with an annual capacity of 100,000 cars, but the program was later increased to 140,000 cars. This is a decisive step toward the solution of this extremely important economic and cultural problem. However, upon the ratification of this program of the Five-Year Plan, it was found necessary to extend the program of automobile production with a view of increasing the output in the last year of this period to 300,000, which will necessarily make for a further extension of the program of petroleum production over and above the 26 million tons provided for by the Five-Year Plan and later increased to 33 million tons.

The agreement made with the Ford Motor Company for technical assistance in the construction of this plant bears testimony to the readiness of the Soviet Government to enlist the co-operation of the world's best representatives of technical progress for the solution of industrialization problems of the U.S.S.R. While the building of this plant is being pushed ahead with increasing speed, energetic measures are also being taken to extend the production of the automobile plant AMO and the automobile works at Yaroslavl.

Miscellaneous. Another important branch of the metal industry is that of the manufacture of various building materials, including *structural steel and iron*; and, especially, that devoted to the production of *construction machinery*, which is still in an embryonic state in the U.S.S.R. In this field it will be necessary to establish a series of plants and equipment depots in order to supply the various construction projects with machinery, tools, apparatus, and instruments. To this should be added plants for the production of *textile machinery, chemical apparatus*, etc. These factories, although involving a comparatively small capital

outlay, are of primary importance as pioneers in their respective fields.

AGRICULTURAL IMPLEMENTS. Finally, there is the tremendous task of agricultural implement production. This is closely connected with the general problem of agricultural reconstruction, upon the solution of which rests the success of the entire Five-Year Plan. The construction program for the agricultural implements industry was originally designed to increase the total value of its products from 125 million rubles in 1927-1928 to 610 million rubles in 1932-1933. It has since been increased to more than a billion rubles. To accomplish this task the Rostov plant will be completed at a cost of 46 million rubles; the Ukrainian plant will undergo extensive reconstruction involving a capital investment of 58.6 million rubles; a number of plants in the Russian Soviet Federated Socialist Republic proper will be rebuilt at a cost of 30.3 million rubles, and a new plant for the production of agricultural implements will be erected at Omsk. The capital outlay for the farm equipment industry is estimated at 180 million rubles.

Tractors. The greatest projects in this farm equipment field are concerned with the construction of the tractor plants in Stalingrad and in the Ural region, with an annual capacity of 50,000 tractors each; and with the extension of the tractor departments of the Putilov works and the Kharkov locomotive works, increasing the production of the first to 10,000, and of the second to 3,000 tractors a year.

This original program for the development of tractor production has, however, already been subjected to a considerable upward revision. At the November, 1929, session of the Central Executive Committee of the U.S.S.R., it was found that the socialization of agriculture was making much more rapid strides than was expected when the Five-Year Plan was drawn up. It was, therefore, decided to approve the construction of three large tractor plants, one each in Stalingrad, the Ural region and the Ukraine. Each of these plants is to be designed for an annual maximum production of 50,000 tractors of the 15-30

horsepower and 60 horsepower types. It was also decided to enlarge the tractor department of the Putilov works in Lenin-grad to increase its output to 20,000 tractors a year. The time allowance for completing these projects was substantially reduced. Upon the realization of this program within two to three years,* the U.S.S.R. will take the first place among the tractor-producing countries of the world.

Such are the general outlines and principal objectives of the program of development for the machinery industry. This review covers, to be sure, only the most essential points of the vast, complex and many-sided program. There is a strongly expressed tendency to specialize in the production of a limited number of types of machinery, and to tackle the problems of the machine building industry step by step, in a well arranged consecutive order, accumulating experience and consolidating every gain before taking up new positions. But however great this aspiration, the requirements of national industrialization dictate the continuous extension of the machine construction program continually to embrace new groups of machine building establishments. During the present five-year period many will not pass beyond the initial stage of development.

Bourgeois economists who visit the Soviet Union sometimes ask if the machine building policy is not dictated by the difficulties in obtaining foreign currency which, in turn, interfere with importations; and whether development of the machine building industry will not diminish with the growth of Soviet agricultural exports. The question was put to us by the German professor Freido in almost these words. We appreciate the fact that capitalist Europe would prefer to see the U.S.S.R. an importer of machinery rather than a country having at its disposal a machine building industry of its own. This, however, would be contradictory to the entire economic policy of the Soviet Union, so clearly stated in the already quoted remarks of Stalin. But determined industrialization does not, of course,

* The Stalingrad plant was completed many months ahead of scheduled time.—*Ed.*

interfere in any way with large-scale importation of foreign machinery during the reconstruction period, especially from countries with which political and economic relations have been adjusted.

Too much importance cannot be attached to the development program for the metals and machine industry. It is the pivot upon which the entire Five-Year Plan rests. Nor is it possible to overemphasize the great difficulties, nor the great responsibilities involved in this strategic section of the reconstruction plan, predominating as it does both because it is a key industry and because it requires the largest single capital investment. It will not only heavily tax the resources and organizing talent of the country, but it will also create rather exacting problems with regard to the technical assistance received from the advanced industrial countries of Europe and America.

6. CHEMICALS

During the five-year period under consideration an entirely new industry, the chemical, will be established in the Soviet Union. It is impossible to exaggerate the significance of chemical production for all other industries: agricultural reconstruction, the rationalization of forestry, the defense of the country, and for general cultural development. Through the increasing utilization of waste substances, the application of chemical methods for the most efficient use of raw materials, the development of power consuming processes, and through the absorption of waste products of power plants, the chemical industry is organically linked with many others. It is one of the most important factors in the development of the country's economic system.

The rate of construction in the chemical industry is determined by the production tasks that must be accomplished during the present five-year period. The output of acid phosphate fertilizers (figured in the equivalent of standard superphosphates) is to be increased from 150,000 tons in 1927-1928 and 271,000 tons in 1928-1929 to 3.4 million tons in 1932-1933. As the operations of the Kerch steel mill gradually develop, the deliveries

of Thomas slag will gradually increase until they reach 95,000 tons (an equivalent of 14 per cent superphosphate) at the end of the present period. The annual production of ground phosphorite will be increased from the 1927-1928 level of 65,000 tons to 2.5 million tons, while that of nitrogen fertilizers (figured in equivalents of ammonium sulphate) will be increased from 5,000 to 800,000 tons a year. The manufacture of potassium salts, begun during this five-year period, is scheduled to attain an output of 1.5 million tons. The total production of chemical fertilizers is to reach 8 million tons.

The realization of this program, which is so essential to the success of this important phase of the general plan of economic development, depends entirely on the execution of huge construction projects for the chemical industry, involving a capital investment of 1.4 billion rubles as compared with the present total fixed capital of about 400 million rubles.

The great power consuming capacity of the chemical industry and the utilization by it of the waste products of power plants make its development depend on the construction of electric power plants as outlined above. Accordingly, the proposed construction of chemical plants is to be concentrated in the following districts: (a) the Donetz Basin; (b) the territory adjoining the Dnieprostroy hydro-electric development; (c) the Central Industrial region with its coal and peat resources; (d) the Ural region, where the by products of coal combustion, coking and non-ferrous metal smelting can be utilized; (e) the Northwest region, with its peat formations, lumber industry, and hydro-electric power stations and, partly, (f) the Kuznetz Basin, Central Asia and Trans-caucasia.

The Ukraine—or rather, its mining belt, the Donetz Basin, the Dnieprostroy and the Krivoy Rog districts—is destined to carry out the biggest construction projects in the chemical industry during the present period, finally becoming the most important chemical production center in the U.S.S.R. Plants for producing synthetic ammonia are to be erected and put into operation at an early date. The construction of these plants is

connected with the installation of equipment for converting fixed nitrogen into mineral fertilizer. The soda plant now in operation in the Donetz Basin is to be greatly enlarged and its annual capacity increased to 300,000 tons of calcined soda. Another new soda plant, with a maximum of 200,000 tons of calcined soda, is to be constructed at Slavyansk. A large chemical plant is to be built in the Dnieprostroy district. The aggregate investment in the chemical industry of the Ukraine is expected to reach 350 million rubles.

The Central Industrial region is to be the center of large fertilizer works, based on the Yegoriev phosphate deposits and the Bobrikov central electric power plant. These combined fertilizer plants will have a capacity of 250,000 tons of sulphuric acid and from 350,000 to 400,000 tons of acid phosphates a year, and will involve a total capital outlay of about 50 million rubles. However, the special field assigned to the Central Industrial region is not basic chemicals but refined chemical products, such as dyes, pharmaceutical products, rare elements, rubber products, etc. The establishment of a large chemical enterprise near Moscow will pave the way to a solution of the problem of artificial silk production. Finally, the peat consuming electric station in the Yaroslavl district will serve as a base for a large rubber plant to be constructed in that district. The production of this plant is designed to meet the growing demand for automobile tires, inner tubes, etc. The aggregate investment in the chemical industry of the Central Industrial region is expected to reach 250 million rubles.

The Northwestern region, or rather Leningrad, its capital city, affords the most convenient place for the production of superphosphates from imported phosphorites. For this purpose it is proposed to establish here a new plant, capable of producing up to 200,000 tons of superphosphates annually. Eventually this plant is to obtain its raw materials on the domestic market, from the recently discovered high content acid phosphate deposits (apatites) in the Murmansk Railroad region (the Khibinsk deposits). In addition, construction of a rayon mill is already

proceeding in Leningrad; and the manufacture of the chemicals involved, such as caustic soda, carbon bisulphide, etc., will have to be organized. The aggregate capital investments in the North-western region are expected to reach about 80 million rubles.

To the Ural region, too, has been assigned important tasks for the development of the chemical industry. Here are abundant supplies of the necessary raw materials: pyrites, phosphates, potassium, etc.; adequate supplies of fuel; and many coal burning, coking and non-ferrous metal smelting plants, which supply a wealth of by products which may be easily utilized for the production of chemicals. In the chemical, as well as in the metallurgical and machine-building fields, the Urals are charged with the great task of stimulating the industrial development of Western Siberia and Central Asia, not to speak of the less remote districts.

It is proposed to locate the first great chemical development in the Bereznikov district, so that the Kiselov coal deposits may be utilized as a source of energy. The cost of this enterprise is estimated at 60 million rubles, and its output by the end of this five-year period is to reach 260,000 tons of soda ash (in 1927-1928 the *total* soda ash production of the Soviet Union was only 210,000 tons), plus 350,000 tons of acid phosphates (again more than the total production of the country in 1927-1928).

Another fertilizer combine of the Ural region is to be located in the district of Soldinsk, working the flue gases from coking establishments, the sulphuric acid derived as a by product at the Bogomolov copper smelters, and the phosphates from the Viatka deposits. The annual production of this plant is to reach 150,000 tons of sulphuric acid and 350,000 tons of phosphates (figured in equivalents of standard superphosphate). The total cost involved is estimated at about 25 million rubles.

A third center in the Urals for the production of fertilizers will work mainly on the by products of the coking works at the Magnitogorsk plant. The production here will consist of high grade nitrate fertilizers for the cotton fields of Central Asia.

It is expected that these fertilizer works will involve a total capital outlay of between 20 and 25 million rubles.

A similar or even larger investment is to be made for the organization of potash production at the Solikamsk deposits, where two mines, the first in the Soviet Union, are to be completed with an aggregate capacity of 1.5 million tons of potassium salts a year.

In addition, it is proposed to construct three or four wood-distillation plants in the Urals, each to have an output of acetic acid, methyl alcohol, etc. larger than the present total for the country as a whole. In other words, here too, the foundation is laid for an entirely new industry.

The aggregate capital investments in the Ural chemical industry are expected to reach about 200 million rubles.

During this period, Siberia and the Far East will be occupied less with building than with a thorough exploration of their chemical resources, with a view of determining a program of development for the next five-year period. That Siberia presents great opportunities in this respect is shown by the preliminary exploration work, and especially by the discovery, in 1928, of lakes with rich reserves of self-precipitated salt. Only limited commercial exploitation of these resources, to the extent of about 60,000 tons of salt, is proposed for the present five-year period. At the same time, with the development of coke production in the Kuznetz Basin, the opportunity is created for the erection of a chemical plant for the manufacture of a number of chemicals, while the enormous timber reserves present an opportunity to take at least the initial steps for the development of a Siberian wood distillation industry.

The total capital investment in the Siberian chemical industry is estimated at 70 million rubles during the present five-year period.

Central Asia is no less in need of exploration than Siberia. One of the biggest problems of the chemical industry in Central Asia during the present five-year period is presented by the Kara Bugas project, where, however, it will not be expedient to

bring the industrial output of sulphates above the limited amount of about 70,000 tons a year during the period under consideration. Central Asia also faces the problem of establishing large works for the production of mineral fertilizers. This plant is to get its power supply from the electric power station at Chirchik. It may also utilize the vast phosphate deposits of the district of Aktiubinsk.

The total capital investment in the chemical industry of the Central Asiatic region is expected to reach about 70 million rubles.

We have already had an opportunity to discuss the entire amount of new capital to be invested in chemical production and the effect it will have on the building up of the fixed capital of this industry. The most cursory examination of this development program, as well as the general pace set for capital investments, whether it be for the country as a whole or for the several regions, leaves no doubt that we have here an entirely new and extremely difficult construction front. The accomplishment of these tasks within the short time allowed will constitute a genuine triumph for the staff of skilled workers to whom they have been entrusted. It will mark a great advance in the reconstruction of the entire economic life of the country and will strengthen its defensive power.

In carrying out the plans for the chemical industry during 1928-1929, the first year of the present five-year period, enormous difficulties had to be overcome, primarily owing to the extreme complexity of chemical production and its novelty in the U.S.S.R. However, the program for that year was fully accomplished. For the second year, 1929-1930, the original Five-Year Plan contemplated a capital investment in the entire chemical industry of 220 million rubles. This has now been raised by the control figures of the operating plan for the year to 344 million rubles.*

* The effects of the increased capital construction are clearly seen in the greatly expanded production. During the first half of 1929-1930 the output of acids, totaling 232,400 tons, showed a gain of 34 per cent over the corresponding period in 1928-1929, while superphosphates, of which 155,000 tons were produced, showed an increase of 106 per cent.—*Ed.*

Thus, on the chemical section of the construction front, actual construction is substantially exceeding that contemplated in that Plan which was considered by many as entirely unrealistic.

7. OTHER INDUSTRIES

Our review of the perspective development of electrification, coal mining, the production and refining of crude oil, metallurgy and machine building, and production of chemicals has grown to be all too long. It was, however, necessary in the case of these basic industries, which determine the general course of the economic development of the country, to consider closely, and with an eye to construction projects and the time allowed for their execution, the truly breath-taking program of industrial development which is at present being realized in the U.S.S.R. The initiated reader has here before him no mere generalization of the tempo and scale of economic progress in the Soviet Union, but concrete construction projects and production tasks, which he may see mentioned in the European and American press, or in reports of the dealings of Soviet Union commercial representatives with big capitalist firms for the purchase of machinery, equipment, raw materials, semi-manufactured articles, etc. This is not a Utopian program for the distant future, but a realistic construction program for this day and time. And while it is being revised in the course of its realization, these revisions are in one direction only, aiming still further to increase the scale, hasten the pace and shorten the term of this great socialist construction.

However extended our review of the concrete tasks of the industrialization of the U.S.S.R. may be, it is still impossible to pass entirely in silence over many of the other industries, and especially those catering directly to the consuming public. But, first, a few remarks must be made about the lumber industry and the production of building materials.

The Lumber Industry. The most cursory perusal of the economic geography of the U.S.S.R. will show that it possesses vast

timber resources. As of October 1, 1929, the total forest area of the Soviet Union is 877 million hectares, of which only 150 million, approximately 18 per cent, are under exploitation. But even now the Soviet Union is one of the world's largest exporters of lumber. It can easily be imagined that with the extension of the forest area under exploitation, this country's part in supplying the world market with the most variegated timber products and building materials will become increasingly important. The timber resources of the Soviet Union are sufficient to meet the demands of the great domestic construction front and still to double or treble the present lumber export during this five-year period. These considerations determine the program for forestry and the lumber industry, as well as for the allied pulp, paper and wood-distillation industries. The output of sawed timber is scheduled to increase from 142 million cubic meters in 1927-1928, to 350 million cubic meters in 1932-1933. For this purpose the exploitation of forest resources will have to be put on a vastly more sound and efficient basis than is now the case. The total amount of capital investment absorbed by the timber, lumber and allied industries during the present five-year period is estimated at more than a billion rubles. The principal lumber centers will be in the Northeast (Archangel), the Ural region, the lower Volga region and the Far East.

Building Materials. Building materials production and the building trades generally are receiving ever-increasing attention in the Soviet Union. Until very recently this has been one of the most backward sectors of the Soviet economic front; primitive *kustar* (handicraft) production methods have predominated. The rapid pace set in the development of the construction front has made new and exacting demands on the industries producing building materials as well as on all building trades. The tension on the building materials market, and the acute shortage of some of the materials, together constitute one of the so-called "narrow spots" of the present Soviet economic development. The Right Wing opportunists propose to fall into line with these "narrow spots" and under their pressure to

slow down the pace of industrialization. It is therefore necessary to emphasize the fact that the Five-Year Plan is based on the proposition that every effort must be made to mobilize all available capital and organizational resources for the purpose of overcoming the building materials shortage, and at the same time completely revolutionizing the production of building materials and the building trades by means of mechanization and rationalization.

One of the most important prerequisites for the successful accomplishment of the many constructional tasks of the Five-Year Plan is the accelerated development of a real construction industry after the model of those in the advanced capitalistic countries, and especially in the United States. The Five-Year Plan provides for an annual increase in the production of *cement* from 11 million barrels to at least 40 million barrels. The minimum increases set by the Plan for the other building materials are as follows: the production of *bricks* is to increase from 2 billion to 10 billion units; of *asbestos*, from 26,000 to 150,000 tons; of *sawed timber*, from 11 million to 50 million cubic meters. Much more important, however, is the program for the reconstruction of the entire building industry. For this purpose a huge capital outlay—nearly a billion rubles—is contemplated during this five-year period.

The actual production of building materials during 1928-1929 exceeded the program laid down by the Plan for the year. Now that the control figures for 1929-1930 have been fixed, it appears that the production of cement for the year will reach not the 19 million barrels provided by the Five-Year Plan, but 22 million barrels. The corresponding figures for bricks are 5.1 billion as against the 4.2 billion contemplated by the Five-Year Plan. Not to fall in line with the "narrow spots," but to overcome the difficulties involved is the Communist method. The expansion of construction must not be permitted to suffer from the lack of an adequate supply of building materials. The annual operating plan for 1929-1930 extends the development program of the construction industry considerably beyond what was con-

templated by the original Five-Year Plan, and the capital investment assigned to this industry during 1929-1930 will reach nearly 200 million rubles.

Light Industries. It has already been indicated in these pages that, side by side with the contemplated development of heavy industries, the Five-Year Plan provides for substantial capital investments in the light industries. Nearly 3 billion rubles are assigned for the latter purpose. Taking into consideration the vast territory of the U.S.S.R. and its numerous population, whose wants as consumers are to be met by the products of light industry, the amount to be invested may appear rather insufficient. There are, however, good reasons. In the first place, the fixed capital which Soviet light industry has had at its disposal is relatively large and it has suffered much less deterioration than was the case in heavy industry. In the second place, the very crux of the problem of extending the industries producing goods for the broad masses of consumers lies, at least for the present period, in increasing their supply of raw materials, which has lagged. Substantial amounts are to be invested for the purpose of insuring a more adequate supply of the materials upon which light industry finally depends for its operations. This phase of the question will be considered later, in the discussion of agriculture.

These, to sum up, are the major statistical barometers of industrial development in the Soviet Union: 22 billion kilowatt hours of electric current, 140 million tons of coal, 40 million tons of crude oil, 17 million tons of cast iron, 8 million tons of chemical fertilizers, nearly 150,000 tractors and nearly 250,000 automobiles, 2 billion rubles' worth of industrial machinery and more than a billion rubles' worth of agricultural implements will be produced in the last year of this five-year period. This is the industrial program which sounds the battle-cry of socialist advance throughout the land of the Soviets, arousing tens of millions of toilers to a supreme effort. Only a few months after the Five-Year Plan was ratified by the Fifth All-Union Congress

of Soviets, its message of rapid industrial development had penetrated not only into the mills and factories, but also to those remote villages for which it opens the only road to real agricultural progress. One of the favorite topics of the capitalistic press has been their attempt to prove that the broad plans of development in the Soviet Union have been adopted and carried out against the will and interests of the masses of the peasants. It is impossible to imagine a more malicious falsehood, or a greater fallacy than this White Guard tale, spread through the columns of the bourgeois press. The Soviet village, starting on the road to radical reconstruction, mechanical farm equipment, scientific agriculture and large-scale collectivization, is criticizing Soviet industry—but for setting too slow, rather than too rapid a pace of industrial development.

We have already referred to the major adjustments involved in the industrial development of the economic structure during the present five-year period. The ranks of industrial workers will swell by more than 35 per cent, while productivity more than doubles and real wages increase by 70 per cent. The cost of production will decrease by at least 35 per cent. The accomplishment of these tasks is not trailing behind the quantitative growth of industry, as the bourgeois critics and the opposition are fond of asserting: they predominate in the Soviet conception of industrialization. It should be emphasized that the XV Congress of the Communist Party of the Soviet Union has already included in its decisions concerning the general lines of the Five-Year Plan, a statement to the effect that “the reduction in the cost of production constitutes the central problem of industry. All other tasks must be subordinated to it.”

The practically 20 billion rubles of industrial developments, the great extension of construction on the industrial front, equal in scope and technique to the highest modern level, the breath taking speed of construction, and the ever widening stream of technical assistance from the world's largest industrial concerns, all create an exceptional state of enthusiasm and heroism. This great era of socialist industrialization is putting its imprint

on a whole generation of builders, who are being qualified and co-ordinated for the accomplishment of the even greater tasks which are even now faintly outlined against the horizon of the present five-year period. Amid the industrial enthusiasm which has seized the land of the Soviets, capitalist habits and predilections are destroyed; our independence of capitalist countries is strengthened; and the foundation of a genuine socialist civilization is laid.

CHAPTER V

SOCIALIST RATIONALIZATION AND THE WORKERS

SOVIET economic policy makes it not merely legitimate but obligatory to consider the place of the working masses in socialist industrialization. To be sure, the workers of the Soviet Union, in their capacity as the directing political power and the organizers of the socialist commonwealth, are also the organizers of that magnificent construction in which the program of socialist industrialization is embodied. Yet it is still essential to consider from every possible angle those questions which compose the labor problem—the position of the worker in Soviet industry. The consideration of this problem will throw light on the enormous and basic differences that, from workers' viewpoint, distinguish socialist industrialization and rationalization from capitalist rationalization in general, and from post-war capitalist rationalization in particular.

The most striking fact about the industrial revival in a number of capitalist countries is the manner in which this new stage of capitalist rationalization is connected with a most vicious offensive against the working class. In this offensive, which is conducted on a very wide front, the methods of fascism and social-fascism are employed on a very large scale. The practical abolition of the eight-hour day which was gained by the working class after many struggles during the Imperialist War and especially during the post-war revolutionary period, the continuous vicious campaign to lower the level of real wages, the growth of unemployment, now assuming a mass character, and the disproportionate intensification of the exploitation of the proletariat—such are the obvious results of capitalist rationalization during the last decade. The degeneration of bourgeois democracy into fascism, the brutal fascist pressure by the ma-

chinery of the capitalist state upon the revolutionary organization of the working class, the savage suppression by armed force of the economic movements of the proletariat, the conversion of the Social-Democracy into a third party of the bourgeoisie and the complete degeneration of the leaders of reformist trade unionism into direct agents of capitalism, constitute merely the necessary social and political conditions which alone make it possible to put the entire burden of post-war "recovery" of capitalism upon the shoulders of the working class.

The greatest significance must especially be attached to the fact (which is strongly emphasized in the declarations of the Comintern and Profintern) that in those very countries which show the most splendid examples of capitalist rationalization of production, the industrial workers have suffered not merely a relative, but even an absolute reduction in their numbers. In a word, the course of capitalist rationalization and its splendid technical achievements result only in intensified exploitation for the workers, in a further sharpening of class contradictions within capitalist society and in international relations, and in the still further undermining of the temporary and partial capitalist stabilizations. The most energetic efforts of the Second International and the reformist trade unions cannot possibly affect this imminent growth of the inherent capitalist contradictions. No theories of organized capitalism, no substitute for genuine economic planning can possibly change the real situation or conceal it from the working masses.

It is, therefore, especially interesting to see how the labor problem is being solved in the course of socialist industrialization of the Soviet Union even during this first and most difficult stage. It is, of course, possible to discuss endlessly the prevailing level of absolute economic welfare of workers in the Soviet Union, as compared with that of workers in the most highly developed capitalistic countries. But nothing can change the tendencies of development, quite visible in both cases, and to the enormous advantage of socialist society.

1. THE NUMBERS OF INDUSTRIAL WORKERS

One of the most urgent problems of Soviet economic policy is concerned with the labor resources of the country and the probability of their absorption into industry. No capitalist country can boast of such a rate of natural growth of population as can the U.S.S.R. The annual rate of natural increase is 1.3 per thousand of population in France, 7.9 in Germany, 6.4 in the United Kingdom, 10.3 in Italy—and 23 per thousand in the Soviet Union. The present population of 150 million grows at a minimum rate of 3.5 million annually, whereas the combined population of all European countries, totaling 370 million, increases only by 2.8 million a year. During the present five-year period the population of the U.S.S.R. will increase by about 18 million persons, including 10 millions of working age. It is as if there grew up within the Soviet Union every year a new country approximately as large as Denmark. Needless to say, this rapid growth of the population is very significant in a country freed from the chains of capitalist slavery and possessing such inexhaustible natural resources as does the U.S.S.R. Still we must not lose sight of the vast economic and organizational tasks arising as a result of such rapid growth of a population distributed over so vast a territory.

At the same time, and as a result of the industrialization of the country, the cities are growing at a rate unprecedented in pre-revolutionary Russia and greatly exceeding any known to the capitalist world. During the period of 1900-1905, not Germany, the United Kingdom, nor the United States of America attained an annual increase in urban population of more than the 3.3 per cent, which was reached in the United States during the period of 1900-1910, whereas in the U.S.S.R. the urban population increased by 5.5 per cent in 1926, and by 5 per cent in 1927. There is no reason to expect this rate to diminish in the immediate future. On the contrary, the actual course of industrialization, which is surpassing the most daring forecasts of the Five-Year Plan, may result in a further acceleration

of the process of urbanization. Judging by the present rate of growth, the relative strength of the urban population in the U.S.S.R. will rise from 18 per cent of the total in 1927-1928 to 20.5 per cent in 1932-1933.

There is no doubt that this rapid growth is primarily the result of the special nature of socialist industrialization, in contradistinction to that of capitalist rationalization. Capitalist rationalization carries in its wake not merely the relative, but the absolute reduction of the number of wage earners. In the U.S.S.R. on the contrary, economic reconstruction and socialist rationalization of industry are accompanied by a continuous growth of the number of industrial workers. The ranks of the workers are growing in the U.S.S.R., in the first place, because industrial production is extending at a rate unknown to capitalist countries; and in the second place, because of a number of other factors peculiar to socialist economy only. What capitalist country, however advanced, can show an annual increase of industrial production of 20 per cent, year after year, for a number of years? What European capitalist country can boast of a single year when the production of its industries showed a 30 per cent growth? In recent years the Soviet Union's industrial production has increased at an average rate of 20 per cent yearly. For 1929-1930 the very realistic annual operating plan indicates a 32 per cent increase.

Another condition favoring growth in the ranks of the industrial workers is the shortening of the hours of labor. Not only has the eight-hour day been fixed by law for all industrial enterprises, but we are already in the second year since the beginning of the gradual introduction of the seven-hour day to replace it. We will still have an opportunity to touch upon this problem in somewhat greater detail. It is enough to say here that in this fiscal year of 1929-1930, there are already 1.4 million industrial workers in the Soviet Union working on the seven-hour day basis.

Finally, no small part in the further increase of the number of workers will be played by the introduction of the uninter-

rupted working day, week and year (involving the employment of several shifts in each plant), which has already been started.* As a result of keeping the plants in continuous operation all state organizations and the country's industrial capital will be employed for an additional 60 days a year, without in any way reducing the number of rest days for the individual worker.

The so-called agrarian overpopulation, a problem inherited from pre-revolutionary days, is naturally a contributing cause to the rapid growth of urban population. But the entire system of the Soviet Union's economic policy—promotion of agriculture, reorganization of the poorest farmers on the basis of co-operation and collectivization, development of large state grain producing farms, special measures of economic assistance for the poorest peasantry, etc.—tends gradually to solve the problem of agrarian overpopulation, so that the basic migration from the country to the city is reduced to smaller proportions with every passing year. But for the immediate future this migration is an indisputable fact. On the other hand, it is necessary to guard against overestimating the proportions of this agricultural overpopulation and its influence upon the economic life of the country, as bourgeois economists who refuse to accept Soviet economics and insist on the necessity of greater opportunities for private capital in the economic system of the country, are wont to do.

In drafting the Five-Year Plan an attempt was made to estimate the distribution of the gainfully employed population at the beginning and end of the five-year period. The accuracy of these computations is, of course, partially conditioned on a set of variable conditions. But they still enable us to see the trend of employment, and aid in appreciating the measures that must be taken to raise the forces of production sufficiently to solve its problems. According to these computations, the number of unemployed will be reduced during the present five-year period from 1,100,000 to 400,000. The latter number may be considered as inevitable under the present technical conditions and is ac-

* See footnote, page 69.

counted for by unemployment in seasonal trades, loss of time resulting from the turnover of labor power in industry, etc. But these measures for the elimination of unemployment by the end of the five-year period do not in any way interfere with those taken to combat unemployment at the present moment. Even in 1929-1930, the second year of the five-year period, urban unemployment will be reduced by 10 per cent as a result of the industrial development and the impetuous collectivization of agriculture.*

These general considerations lead directly to the question as to the number of industrial workers in the U.S.S.R. The total number of employees in 1927-1928 was 11.3 million. If we subtract from this number the agricultural and forest laborers, this total will be reduced to 9.2 million. By 1932-1933 (at the end of the present five-year period), the numbers are estimated to reach 15.7 million for all employees and 12.8 million exclusive of forest and agricultural laborers. In other words, during this five-year period, the ranks of persons working for hire will increase by almost 40 per cent. It should be added that these estimates were made on the basis of the rates of development of industry, transportation and other branches of national economy fixed by the Five-Year Plan, but which have already been surpassed, at least as far as the first two years of the period are concerned. Neither do these estimates take into consideration the introduction of the continuous operating year in industrial and state establishments. It is, therefore, reasonable to expect that the number of industrial workers at the end of the period will be greater than contemplated by the Five-Year Plan.

This rate of increase in the number of wage earners may appear insignificant in comparison with that of the preceding five-year period, when the number of wage earners was increasing at an average of 10 to 12 per cent a year. But the growth of the working masses during the period of rehabilitation took

* In August, 1930, the number of registered unemployed had fallen to 500,000, most of whom were those seeking employment for the first time—unskilled workers, women and young workers.—*Ed.*

place primarily as a result of the absorption of the existing fixed capital by the new régime. The present five-year period, however, is confronted with the task of thoroughly reconstructing and almost completely renewing the productive equipment of the country. In passing from the period of rehabilitation into that of new construction the increase in gainfully occupied labor in relation to every additional unit of fixed capital is inevitably reduced. All branches of production have been assigned the task of substantially increasing the quality of their produce and the productivity of labor. But even under these conditions the increase in the number of employed workers during the present five-year period will reach approximately 6 per cent annually. And the revised control figures for the operating year 1929-1930 show that during this second year of the period under consideration, hired labor as a whole will increase by 9.3 per cent, while the number of wage earners engaged in census industry will grow by 7.2 per cent. The largest share of this increase will be absorbed by heavy industry. The total number of wage earners will increase in 1929-1930 by over a million persons. To appreciate the full significance of this rate of growth it must be compared with that of pre-revolutionary times. Only at the very initial stages of Russian capitalism did the tempo of growth of the proletariat even slightly exceed that set by the Five-Year Plan. But never since that early period, not even during the years of great industrial activity immediately preceding the Imperialist War, did the ranks of the proletariat ever increase by more than 3 to 4 per cent annually.

The 11.3 million proletarians in the U.S.S.R. in 1927-1928 constituted 14 per cent of the total population of working age. This proportion will rise to 17 per cent by the end of the Five-Year Period. In other words, the relative weight of the proletariat will increase by twenty per cent in this period. These figures are somewhat faulty, since the number of wage earners is weighted against the *entire* population of working age, *i.e.*, against all the gainfully occupied people of the country, as well as their families. A more accurate statistical method

would indicate that the relative importance of the proletariat in Soviet society is considerably greater. But even so these indices show the trend very clearly. The structure of the Five-Year Plan and the entire course of economic development in the U.S.S.R. imply a substantial increase, not only in the absolute, but also in the relative number of employed wage earners. A substantial improvement in technical method and the organization of production is also implied. The enormous importance, economic and political, of the increased relative weight of industrial workers in the whole population is, of course, obvious. The process of socialist industrialization is necessarily closely linked with the strengthened position of the proletariat.

2. WAGES AND THE PRODUCTIVITY OF LABOR

Still fresh in our memory are Lenin's words with regard to the economic basis for force in revolutions. In his remarkable pamphlet "The Great Beginning," devoted to the organization of *subbotniks*,* Lenin says:

The dictatorship of the proletariat, as I have had repeated occasion to point out, constitutes not merely violence against the exploiters; and not even, mainly, violence. The economic foundation of this revolutionary violence, the guarantee of its vitality and success, lies in the fact that the proletariat pursues and carries to completion higher tempos in the social organization of labor than is the case with capitalism. That is the essential point. There lies the source of the strength and the guarantee of the certain and absolute victory of Communism.

The quick tempo of the social organization of labor passes like a red line through the visible economic development of the U.S.S.R. It has put its imprint upon the economic program of this period.

The effectiveness of the economic development planned for the present five-year period, lies primarily in the radical re-

* During the early period of the Revolution and during the Civil War, workers known as *subbotniks* (Sabbathers) gave up their normal rest day in order to aid in expediting the process of rehabilitation.—*Ed.*

construction of the power base and in increasing the equipment of labor with mechanical power. In 1927-1928 the consumption of electric and mechanical energy amounted to 2,421 kilowatt hours per industrial worker. This figure will practically be doubled by the end of the period. According to the obvious underestimations of the original draft of the Five-Year Plan the consumption of mechanical and electric energy per worker will reach 4,677 kilowatt hours in 1932-1933. In transportation the capacity of installed mechanical power per worker will increase during the same period by 46 per cent. In agriculture the capacity of animal and mechanical power per worker will increase, again according to computations which are obviously low, by 20 per cent. This increase will be substantially greater in the socialized sector, reaching 184 per cent on state and 124 per cent on collective farms, whereas in the private sector the increase will amount only to about 12 per cent.

Relying primarily on this factor and depending in addition upon the great development of the class consciousness and the cultural level of the Soviet proletariat, the economic plan for this five-year period provides for increasing the productivity of industrial workers by 110 per cent, while the productivity of labor in transportation is to increase by 75 per cent. Computations of the productivity of labor in agriculture are extremely complex and cannot be made at this stage with any satisfactory degree of accuracy.

We have already had opportunity for emphasizing the importance of reducing the cost of industrial production as a part of the program of economic development and general economic policy. The need for systematic strengthening of the alliance between the socialist city and the village of poor and middle peasantry, and accelerating the strong competition with advanced capitalist countries also raises the question of lowering the cost of industrial production to the position of a most urgent objective in the industrial development of the Soviet Union. It was not by accident that the lowering of production costs was placed by the XV Congress of the Communist Party of

the Soviet Union as the central task of industry, the solution of which preceded all others. The great increase in the productivity of labor by the end of 1932-1933, then, constitutes a decisive force, not merely on the industrial front, but also in the entire Soviet economic policy during this five-year period. A great share in the accomplishment of this task belongs to the socialist competition between individual industrial enterprises as to a method of stimulating production—a method really available only to socialist society.

The most important statistical indicator of the socialist nature of the industrialization of the national economy and the rationalization of industry, as they are now taking place in the U.S.S.R., is the trend of real wages. Great class struggles are taking place at present in capitalist countries on the question of the wage level. Strikes of great masses of European, American and colonial workers and huge lockouts by employers mark this incessant struggle. In many advanced modern capitalist countries, average wages at the present time are at a lower level than before the war. This cannot be concealed by all the ingenuity of the Social-Democracy and reformist trade-union leaders. It is also impossible to get away from the fact that for the past five years, wages in capitalist countries have been practically stable. They increased in the United States only by 2 to 3 per cent, while in England they dropped 0.3 per cent between 1922 and 1927, and in France they have suffered an even more substantial reduction.

An entirely different trend is shown by wages in the U.S.S.R. The level of real wages of Soviet workers was raised 126 per cent from 1922-1923 to 1927-1928; *i.e.*, it was two and one-quarter times as high at the end of the five-year period as at its beginning, being also 30 per cent above the pre-war wage level. There is no disputing the fact that the level of wages of the Soviet worker is still quite low and still cannot fully satisfy his growing wants. But the tendency shown by the movement of wages in the U.S.S.R. is radically different from what is taking place in capitalist countries, and it clearly shows the genu-

ine socialist nature of the Soviet economic development. It might be helpful to quote here from the comparative statistics compiled by the prominent Soviet economist and statistician, Strumilin. Strumilin says:

It is well known that before the war the wages of the Russian workers, both nominal and real, lagged hopelessly behind all the leading countries of advanced capitalism. For instance, if the real wages of the English workers in 1905-1909 are to be taken as 100, then real wages in Germany were 63.5, in France 55.5, and in tsarist Russia not over 34. But in the spring of 1928, according to the statistics of the International Bureau of Labor Statistics the respective comparative figures as to real wages change as follows: London 100, Berlin 71, Paris 56, Moscow 52, Prague 47, Vienna 45, Rome 43, Warsaw 40, etc.

Thus, even according to the statistics of the organ of the League of Nations, which can hardly be suspected of any special sympathy for the U.S.S.R., the Soviet Union has already attained and passed the real standard of living of the workers of many capitalist countries. But the League of Nations body relies for its comparative statistics exclusively on the data concerned with the money-wages of the workers and the price level of the most important food products. It fails to take into account, for instance, the sums deducted from the wages of the European workers for social insurance, which in Germany reach 7.5 per cent and which are not made at all in the U.S.S.R.; it fails to take into consideration the differences in taxation, room rental, and many other working and living conditions in the various countries. If all these conditions were accounted for in these statistics they would show that the real standard of living of the Moscow workers August, 1928, was higher by several per cent than that of the Berlin workers. The Soviet worker in Moscow, then, enjoys even at present a higher standard of living than the worker in Paris and Berlin. There is no doubt that within five years, after the Five-Year Plan has been carried out, we will equal and surpass not only Berlin, but also London.

Let the representatives of the International Bureau of the League of Nations deny, if they can, the fact that even at the initial and most difficult stages of its economic development, while the eight-hour day was being introduced and further steps taken to shorten the hours of labor (and notwithstanding the fact that it is starting out from a much lower level in the development of its productive forces than that prevailing in the

great modern capitalist countries), the Soviet Union still offers its workers a level of wages higher than pre-war, and more favorable economic conditions than many of the so-called "advanced" capitalist countries. The projected curve of the wage scale during the present period must be conceived and considered in the light of this actual accomplishment.

No great insight is needed to understand that the conditions connected with the accumulation of capital; the necessity to accelerate the investment of new capital in the national economy of the U.S.S.R.; the great tasks involved in raising the backward branches of production, all demand that the productivity of labor grow at a considerably higher rate than real wages. The Five-Year Plan of economic development is accordingly based on the supposition that with the increase in the productivity of labor by 100 per cent shall come an increase of about 50 per cent in nominal wages and 70 per cent in real wages. Taking further into consideration the fact that during the first stage of the New Economic Policy the branches of light industry, catering to the immediate consumer, achieved a relatively great increase in wages, the Soviet economic program for this five-year period puts special emphasis upon increasing wages in heavy industry. During the present five-year period the nominal wages of transportation workers are to increase by 40 per cent; of construction workers, by 30 per cent; of intellectual workers on the cultural front, by 70 per cent; and of civil service employees, by 35 per cent. As a result of the reduction of the cost of living by 14 per cent during the five-year period, the corresponding increases in real wages will be proportionately higher, in the same degree as was indicated above for industrial workers.

Another important condition must not be overlooked. It is well known that social insurance of workers and employees in the Soviet Union is provided, not by means of sums deducted from wages, but by means of additional payments made by the establishments at their own expense, averaging about 13 per cent of their total pay-rolls. Out of these payments is

formed the budget of the U.S.S.R. social insurance funds which already amounts to over a billion rubles. But in the course of the work upon the Five-Year Plan there was born the thought of the so-called collectivized wages, *i.e.*, that a certain percentage of the wage increase be assigned to a special fund for satisfying some of the most urgent wants of the working class not in an individualistic, but in a collective manner. It is estimated that during the present five-year period this sum will reach over a billion rubles, to be used primarily for improving the education and training of working-class children.

3. HOURS OF WORK

From the foregoing it appears that the increase in the numbers of the proletariat and the trend of wages of employees in general, and of wage earners in particular, as they are taking place both in the course of the actual development of the U.S.S.R. and in the economic program for the present five-year period, are radically different from what is taking place in the modern capitalist countries. Even more striking is the contrast between the length of the working days. On the other side of the Soviet frontiers, in all capitalist states, savage pressure is exerted by capitalism in order to wipe out the eight-hour day which has been partially achieved by the proletariat. The revolutionary energies of the European working class are still spent on the struggle for the eight-hour day, *i.e.*, the same demand that has been inscribed on the banners of the international proletariat for decades. In the capitalist countries of Europe, America, and Asia, and in colonies, the nine-, ten-, and even twelve-hour day still predominate; and in places we find even more horrible forms of labor exploitation.

The evolution of the working day in the U.S.S.R. presents an entirely different picture. In 1913 the working day averaged 9 hours and 42 minutes; in 1917 when the workers took matters into their own hands and introduced the eight-hour day, the average hours of labor really were 8 hours and 45 minutes.

By 1924 the average working day was reduced to 7 hours and 37 minutes, by 1925 to 7 hour and 25 minutes, by 1926 to 7 hours and 20 minutes and by 1927 to only 7 hours and 18 minutes. These figures are given according to the compilation of the trade unions themselves. On the tenth anniversary of the October Revolution the historical manifesto of the Central Executive Committee of the U.S.S.R. was published, providing for the gradual introduction of the seven-hour day for *all* industrial workers. The Five-Year Plan of economic development does not merely include in its computations the carrying out of the instructions of this October manifesto. It also foresees the possibility, at the end of the five-year period, provided the entire program of economic reconstruction is successfully realized, for the gradual introduction of the six-hour day.

As compared with the pre-revolutionary past the working day of the industrial proletariat is at present 2.18 hours shorter, and in 1932-1933 it will be shorter by 3.21 hours. To put it differently, by the end of the present five-year period the working week will consist of 40.2 hours, whereas the working week in the manufacturing industries of capitalist countries consists on the average of 49.6 hours in the United States of America, 47.1 hours in England, and 47 to 52 hours in the various industries of Germany (all of these figures are based on a seven-day week).

No comment is necessary. The figures speak for themselves; they strike into the very core of capitalist society and capitalist rationalization. But, perhaps, one might ask, is it merely in the statements of the Soviet Government that the seven-hour day is being introduced? Perhaps in the real course of construction there are forces and factors interfering with the realization of this great idea? The best answer to the skeptics is supplied by the facts. In 1928-1929, the first year of the five-year period, the seven-hour day was actually put into effect for 453,000, or 20 per cent of the industrial workers of the U.S.S.R. According to the definite provisions of the annual operating plan for 1929-1930 the introduction of the seven-hour day for an-

other 400,000 workers is assured. Thus in 1929-1930 over 860,000 workers engaged in heavy industry, or a total of 960,000 industrial workers, that is, 40 per cent of all industrial wage earners, will enjoy the benefits of the seven-hour day. There is no doubt that the seven-hour day will be put into effect for all the workers in industry and transportation of the U.S.S.R. before the conclusion of the five-year period. And there is nothing fantastic about the expectation that by the end of the five-year period the question of inaugurating the gradual introduction of the six-hour day will be taken up for practical consideration and action.

This sums up the most important phases of that involved complexity of questions which form the labor problem of the U.S.S.R. in the initial stage of the socialist reconstruction of its economic system. But one cannot examine this subject from all angles without taking into consideration the rapid development by the working class of class consciousness, culture and social and political initiative which are reaching a higher level with every new year of socialist construction. The growth of the eagerness to action upon the part of the proletarian masses within the Soviets, the flow of proletarians into the Communist Party, the development of greater activity upon the part of trade unions, labor co-operatives, and numerous labor associations, the increasing number of inventions by working people, the impetuous wave of socialist competition, the decisive proletarianization of the Soviet apparatus, pours forth like a gusher in the real course of Soviet socialist construction. And how little has this great release of energy and activity upon the part of the working class of the Soviet Union in common with the tale about the alleged decline of proletarian initiative or the alleged ossification of labor organizations, spread in the columns of the Social-Democratic press of all shades and hues up to and including that of the Trotskyites and Brandlerites. The fact that the Five-Year Plan, which provides that the greater part of the national income be used for capital invest-

ments, involving as it does *quite expressed self-denial* for the cause of the great historic tasks of socialism, nevertheless enjoys the greatest popularity among the proletarian masses of the Soviet Union, bears testimony to the high degree of class maturity of the Soviet proletariat as well as to the genuine socialist nature of the economic construction that is carried on in the U.S.S.R.

CHAPTER VI

AGRICULTURAL ADVANCEMENT AND SOCIALIST REORGANIZATION IN THE VILLAGES

1. INTRODUCTORY REMARKS

WE have now come to the most difficult and fascinating problem of these days: the socialist reorganization of the Soviet village, to secure the advance of agriculture in the Soviet Union by socialist methods. This, we may say, is the central idea of the Five-Year Plan now being advanced in the Soviet Union with such remarkable perseverance and creative enthusiasm. At the same time capitalist observers are amazed at this task, with its boundless promise and gigantic difficulties. It is here that the bourgeois critics and opponents of the Soviet Union see it confronting an inevitable collapse.

There is nothing surprising in the keen interest which the whole capitalist world takes in the endeavor to carry out this program, which overtakes our bourgeois elements in their last refuge, and leads to the complete abolition of capitalism in the Soviet Union. It is only a short time since the bourgeois elements in the Soviet Union and abroad, and liberal *Smenovekhovtsi* * of every shade and color, derived comfort from the fanciful idea that economic progress was bound to bring about a transformation of the social nature of the Soviet power and a restoration of "sound" capitalism in the U.S.S.R. The open and extensive socialist offensive in the village destroys the last of these illusions and plainly demonstrates that the position of socialism in the U.S.S.R. has been strengthened and consolidated on a new level.

* Bourgeois groups adhering to a "changed orientation" with regard to the Soviet Government, implying the abandonment of the fight aiming at its forcible overthrow and depending on its peaceful evolution into a capitalist democracy.—*Ed.*

Nor is there anything surprising in the fact that this program has sharpened class resistance on the part of the capitalist elements within the U.S.S.R. and increased capitalist hostility toward the Soviet Union the world over. Only the naive "man in the street" or the philistine can imagine that the sharper aspect taken by the class struggle has been due to what is termed "incitement" on the part of the Soviet authority and the Communist Party. This is an absurdity, born of fear. If the class struggle, and the class resistance of capitalist elements in the Soviet Union have become more acute, it is because of the inevitable logic of the very fact of socialist construction, which is carried on on the basis of relentless industrialization, and embraces increasing numbers of petty-bourgeois peasants. Here indeed the last and decisive battle is being fought. The program of socialist reconstruction of the village does not only cause intensification of the class struggle: at the same time it opens the way for the complete disappearance of classes in the Soviet Union.

In the last ten or fifteen years agriculture and the peasantry in the Soviet Union have gone through transformations and upheavals of a scope and a depth never known before. At the start of the October Revolution the Russian village had 102 million hectares of land under cultivation, of which a large proportion was owned by the nobility, the clergy, and members of the imperial court. And within the 16 million peasant households there was a heavy layer of kulaks. This top of the peasantry had grown particularly rich and prosperous as a result of the Stolypin land reform of 1907. The broad masses of poor and middle peasants groaned under the burden of feudal-capitalist exploitation; their uninterrupted waves of agrarian revolt were undermining the foundations of the Russian Empire. Tsarist Russia exported about 700 million poods (12.6 million tons) of grain annually, at the cost of underfed masses. The agricultural technique of an overwhelming peasant majority was at a primitive level.

This agrarian order was destroyed by the October Revolu-

tion. During the historical night which spanned October 25 and 26, 1917, the Soviet authority abolished private ownership in land. In the R.S.F.S.R. alone 110 million hectares of land passed into the hands of the poor and middle peasants. And of this 50 million were taken from the kulaks. In this way peasants were relieved of the weight of the 450 million rubles they had formerly paid as rentals on these lands alone. The hour of agrarian revolution had struck. Land was nationalized and the redistribution that was the desire of centuries came with the end of private ownership. It was completed in the subsequent course of the October Revolution by the expropriation of kulak groups. The tide of revolution swept away the vast farm enterprises which had formerly been run for the market by members of the gentry: the number of landless peasants fell off sharply and the size of individual peasant holdings increased. The number of peasant households has increased from 16 million, on the eve of the Revolution, to 26 million at the present time, and the entire aspect of the village has radically changed.

This profound transformation of social relations in the village went on over a period of years, after the productive forces of the country had been sapped by the Imperialist War; and while a bitter civil war and a class war against capitalist intervention from abroad were waged. The stern years of War Communism, when the entire economic life of the country was subordinated to the great needs of the class war against capitalist restoration, was bound further seriously to impair the conditions of agricultural production. The severe crop failure of 1921, and the terrible famine of that year, which cost millions of lives and decimated the labor force in a number of the most important agricultural regions, dealt another severe blow to farming. Agricultural production in the U.S.S.R. had fallen, by the end of the civil war, to 50 per cent of its pre-war volume.

We recall these facts, which are a matter of general knowledge, to emphasize the profound thoroughness of the economic and social transformation of Soviet agriculture and the Soviet village; and to point out the vastness of the task and the enor-

mous difficulties it implied. It is still only partly completed; much more has yet to be accomplished within the period immediately before us. Only those who will trouble to consider in an honest and impartial manner the agrarian situation which the Soviets inherited from tsarist Russia, the tremendous sacrifices made during the civil war to protect the land of the Soviets against capitalist intervention and strengthen the foundations of the Soviet system, and who will understand the devastating effects of the terrible crop failure of 1921, will be able to appreciate the agricultural advance already accomplished and the magnitude of the task which the Soviet Union has set itself for the immediate future.

In the chapter on the results of the rehabilitation period we noted the level of Soviet agricultural production attained by the end of the year during which the Five-Year Plan came into effect, and the shortcomings in this field. That the rate of agricultural development in the Soviet Union has lagged behind that of industry and the expanding needs of the growing population is very keenly realized. Two years ago, at the XV Congress of the Communist Party, this deficiency was made clear, and a decisive method of overcoming it outlined. Least of all, was the lag of agricultural improvement to be the cause of such alteration in the general economic policies of the Soviet Union, as was demanded by a number of bourgeois economists in the U.S.S.R. and by the opportunist elements within the Communist Party itself. On the contrary, as the menace was fully realized, the Soviet agricultural program was reformulated on an unprecedented scale. This effort of Communist thought, directed toward overcoming the low productivity of small-size farming and devising the ways of socialist reconstruction, was made the basis for the entire Five-Year Plan. We shall discuss the concepts it evolved.

2. AT THE CROSSROADS

Agriculture in the Soviet Union has been handicapped by the prevailing methods of small-scale farming carried on in 26 mil-

lion individual peasant holdings, working at an extremely low technical level; and by the heavy burdens, left by the recent feudal-capitalist exploitation, the Imperialist War, the bitter civil war, and the crop failure of 1921. Yet the restoration of agricultural production to the pre-war level has been accomplished in an exceedingly short time. The extension of acreage sown to industrial crops, the growing use of agricultural machinery, the adoption of better methods of cultivation, the substitution of multiple crop rotation for the old three-field system, the development of rational methods of land organization, the growth of co-operative marketing of agricultural products and of co-operative methods in agricultural production, together with the transition to socialized production on a wholesale scale, are matters of common knowledge. They mark the progress of Soviet agriculture during the reconstruction period. In the chapter dealing with the general economic level of the Soviet Union at the outset of the five-year period embraced in the Plan we showed the condition of agriculture production and the tendencies of its further development

Despite the results achieved, the past two years have been marked by a certain strain in regard to the food supply of the Soviet Union. This has caused grain exports to be temporarily suspended, the adoption of strict regulations for grain procurement and supply and, in some instances, resort to measures of repression against the large kulak farms, which had been sabotaging the interests of the proletarian state and resisting its economic policy. As was to be expected, these developments gave rise to a veritable orgy of abuse in the bourgeois and émigré press, with predictions of the rapid economic decomposition of the Soviet Union, bound to be followed by a political one. Indeed, within the Soviet Union itself, and even within the Communist Party, voices were heard speaking of an alleged degradation of agriculture—which had, however, been rather oddly accompanied by extremely rapid agricultural reconstruction, a growing supply of agricultural machinery, and an increasing application of scientific methods in farming. It is now clear to

everybody that clamor from abroad over the economic crisis and lamentations within the country over the degradation of agriculture were only social reflections of the class resistance to socialist construction on the part of the capitalist and, particularly, the kulak forces. It is plain now that we are not facing a degradation of Soviet agriculture, but its initial backwardness and the lag of its growth behind that of the socialist industrialization of the country.

The expansion of industrial production has been proceeding at the rate of 20 per cent a year; and in 1929-1930, it reached 30 per cent. Urban population has been increasing at a minimum annual rate of 5 per cent. New capital development in industry has been accelerated on an ever growing scale, adding hundreds of thousands of workers to the labor army. This advance of industry has been accompanied every year by a new and very substantial increase in real wages. Nor is that all. It must be remembered that prior to the Revolution, in tsarist Russia, only a comparatively small group of some 5 million people, out of a total population of 135 million had a fairly decent standard of living. All the rest dragged out a most miserable existence, never much short of actual starvation. The abolition of capitalist exploitation, and the disappearance of feudal conditions in the country, were bound to lead to a considerable advance in the food standards of the masses, urban and rural alike. But where a population of 150 millions, which increases at a rate that is not known in any other country in the world, is concerned, even a small advance in those standards means a tremendous increase in demand, which only a very rapid growth of production can meet. And the rate of agricultural development has been obviously insufficient. It has lagged far behind that of the process of industrialization and of the wants of the masses, awakened by the Revolution, and their participation in the direction of the country's affairs. Thus the central problem of Soviet economic policy has become that of ascertaining the causes of this lag and devising ways of accelerating the growth of agricultural production.

Every one realizes that this must be done quickly and on a large scale. Every one also realizes that the only way of attaining this aim is by overcoming the low productivity of small individual farming; that is, through solving the problem which at a certain historical stage confronts every country which sets out on the road to economic progress.

The march of the October Revolution and the progress of socialist construction had reached another crossroad. The country had to face squarely the obstacle raised by the low productivity of small individual farming, and discover a means of overcoming it. We have repeatedly made it clear that not every type of productive advance is acceptable to the Soviet system, or the Soviet economic policy. The progress of productive forces must be of such character as shall afford the assurance of increasing the strength of the socialist elements in the economic system. It is thus not to be wondered at that this problem should have given rise to a tremendous effort of political thought and an intense political struggle. In this instance we have had to deal with the deciding problem of the socialist revolution, that of socialist reorganization of peasant economy. As they confronted the great problem of development of productive forces in agriculture, the Communist Party and the Soviet Government found themselves, like the legendary hero, at the parting of two roads.

The first road suggested was that of allowing free rein to the economic initiative of the well-to-do peasant groups; alleviating their tax burdens; according them easier terms for land rent and the hire of labor; changing or qualifying those policies then in force regarding the supplying of agricultural machinery, which were designed to take care almost alone of the needs of the poor and middle peasants; mitigating the state regulation of grain prices; changing the legal status of the kulaks by giving them, in one way or another, access to the Soviets and other rural public bodies. In a more or less disguised form, as a complete system or as occasional suggestions, and with varying boldness, this has been the program consistently advocated by

the bourgeois economists in the Soviet Union and their advisers abroad, especially at times of economic stress. These views have penetrated even into the ranks of the Communist Party, as is shown by those who maintain that the country needs grain above all else no matter on what kind of farms it has been raised.

There can be no doubt that the insistence displayed in putting forth this program and adducing arguments to support it, reflects the aspirations of the upper layer of the peasants. In the system of the country's agricultural economy this class has preserved a comparatively strong position. Thus, it may be pointed out that in the main producing regions 10 per cent of the farm units, forming the upper group in regard to the value of instruments of production owned by them, own from 35 to 45 per cent of all farm machinery and over 30 per cent of all draft animals. On the other hand, 30 per cent of all the farm units, which constitute the lowest group in regard to the value of instruments of production, own only from 5 to 7 per cent of the farm machinery, and in most cases no draft animals at all. An analogous picture is obtained if the peasants are grouped according to the acreage under cultivation. It has been ascertained, through special investigations conducted in 1925, 1926, and 1927, that 10 per cent of the peasants, representing large acreage units, held about 30 per cent of the total area planted in 1927, whereas 30 per cent representing small acreage units had only 6.5 per cent of the total area under cultivation. The real mainstay of Soviet agriculture is, of course, the middle group among the peasants, forming about 60 per cent of the present population and holding the same proportion of the total area planted. Yet in the social structure of the Soviet village there is still an upper group, hampered by the Soviet economic system and looking for a way onto the road of capitalist development. This group dictates to the bourgeois economists and politicians, and to the opportunist elements in the labor movement, their attitude in regard to the methods of agricultural advance in the Soviet Union.

No exceptional acumen is required to realize that their road is

not acceptable to the Communist Party nor to the Soviet Government; that if a start is made in that direction, it will be impossible either to preserve the conquests of the October Revolution or to build up a socialist society. That method of promoting agricultural development is the method of capitalist restoration, the method of our liberal Smenovekhovtsi, who would lead the degradation of the Soviet system into a bourgeois democracy. That is the road to which the capitalist elements within the Soviet Union aspire, and which responds to the desires of the capitalist forces abroad, who are anxious to have a bourgeois Russia as their own agrarian quasi-colony.

The method of securing agricultural progress through the development of capitalist farming would mean a renunciation of the policy of industrialization; it would mean leaving the equipment of agriculture to the industry of the western capitalist countries, which would thus be assured a position of economic hegemony. It is impossible with the one hand to build up a socialist industry in the cities, while the other lets loose in the country the elementary forces of capitalism. The Soviet Union has not chosen and will not choose that road.

There is another road to agricultural progress. It runs through socialist reconstruction of the peasant economy and a technical revolution in farming on the basis of socialized agricultural production, to bring about a system of large-scale farming based on the use of machinery and scientific methods—not capitalist, but socialist methods. This task, in all its magnitude and historical importance, has been set squarely before the Soviet Union. This road lies through the enhanced development of giant socialist farms (*sovkhos*), for which the nationalized land fund of the country affords boundless possibilities; through the active collectivization of the small and middle-size peasant holdings, which will efface the boundaries between individual holdings, combine their tools and efforts, place them on the basis of machine technique and strike at the very foundation of village individualism; through the building up of an extensive net of machine and tractor depots as a means of wholesale collec-

tivization of entire villages, townships, and districts; through the development of a co-operative organization of production and marketing which will include the entire peasant population; through the extension of the system of "contracting"* between government agencies and the peasantry, to embrace the great majority of peasants. This second road is the one chosen by the Soviet Government and is that along which the practical construction work in the Soviet Union is advancing along the whole front.

This socialist advance in the village implies, however, and cannot help implying, a sharpening of the class struggle, a desperate resistance of the kulak top of the peasantry, who see the ground of capitalist existence and capitalist development slipping away from under their feet. With the aid of every resource of the proletarian state organizations, the growing strength of the socialized portion of agriculture, and of socialist industry, it is proposed to disarm the capitalist top of the village, destroy the most hidden roots of capitalism, and combine the mass of the smaller peasant holdings into large collective farms. Such is the great task the accomplishment of which will secure the growth of the productive forces in agriculture and at the same time solve one of the central problems of socialism.

Needless to say, only this road, along which the economic development work in the Soviet Union has started without hesitation or reservation, corresponds to the program of industrialization along socialist lines which is the crux of the general plan of economic reconstruction and socialist development in the U.S.S.R. The only way of solving the pressing problems that arise from the agricultural backwardness and the present difficult economic situation is by co-ordinating socialist industry and agriculture, using the power of the former for the technical equipment of the latter, as it is gradually reconstructed and

* Under the system of contracting the soil cultivators enter into a definite agreement with the government purchasing agencies, binding themselves to plant a specified acreage and to sell the crops at a specified price to the purchasing agencies, who, in return, advance money and equipment in part payment for the future crop.—*Ed.*

collectivized, thus putting an end to the backwardness of country life, and bridging the chasm between city and country—one of the most important objects of socialism. It is obvious that the problem of linking the workers and peasants thus assumes a new aspect. When the New Economic Policy was enacted, a link between city and country, at the time of great importance for the restoration of agriculture, was provided through the medium of trading and marketing. However, new times and new objectives require a new type of union between the socialist city and the country in process of socialist reorganization. It rests increasingly on functions of production; and more and more it serves the technical and social reconstruction of the entire agricultural production.

This union, which leads to agricultural progress through socialist reorganization, radical technical reconstruction, and the complete destruction of the traditional forms of country life, is abhorrent to all philistines and henchmen of capitalism; but it forms a path along which the proletarian and peasant masses of the Soviet Union, under the leadership of the Communist Party, are steadily advancing.

This way of furthering the productive forces of agriculture is not understood or approved by the opportunist elements in the Right Wing of the Communist Party (Bukharin's group), who, to quote the XVI All-Union Conference of the Communist Party, "represent in fact an ideological reflection of the assault upon the Soviet State that is carried on by the capitalist elements which endeavor to direct the village on to the road of capitalist development." The resolution of the Conference further says:

The Right-Wing's proclaimed policy of refraining from building large socialist farms and from supporting the increased development of collective farms—a policy of abstaining from the systematic and consistent transformation of agriculture on the basis of large-scale production—is regarded by the party as a plain shift to the position of the kulaks, and equally plainly, a renunciation of the leadership of the proletariat in the field of agricultural development. The party rejects this deviation to the Right, just as it rejected, a few years ago, the Trotskyist distortion of the party course, which was undermining the alliance between the working masses and the middle peasants.

Being an opportunist movement, the deviation to the Right never displays its program fully, with all its implications. But its political physiognomy is no less definite for that; and the fact is not disguised that its political rôle is that of petty-bourgeois opposition to a sustained socialist offensive against the remnants of capitalism within the Soviet economic system. The danger of this opportunist movement is also obvious at a moment such as this, when the creative forces of the proletariat and of the advanced groups of the poor and middle peasantry must be aroused and concentrated upon the solution of the complex problem of socialist reorganization of agriculture.

At the present time, when this great and arduous task has just been formulated in all its implications; when the final transformation of the archaic forms of agricultural production and of village life is gradually permeating the consciousness and will of the toiling masses; and when the fierce resistance of all stagnant groups—petty-bourgeois and philistines, doomed survivors of capitalism, opportunist skepticism—must be overcome, hesitation and vacillation are very harmful. They are bound to disarm the will of the proletariat in the face of capitalism in this last final battle. That is why the Communist Party, now that the road to agricultural progress has to be chosen, has not only rejected all methods suggested by avowed or disguised liberals, but has also dealt a heavy blow to those who, in theory or in practice, openly or under disguise, represent the opportunist deviation to the Right.

There has, of course, been nothing unexpected in the road, which is that of socialist reorganization of the village, chosen by the Communist Party and the Soviet Government to advance the productive forces of agriculture. It alone corresponds to the logic and the program of Communism. That, however, does not mean that, as a matter of practical present day political policy, the choice was a simple affair which did not imply any struggle. On the contrary, an exceptional effort of revolutionary will was required before that object was set forth as a practical program of economic policy; and the great momentum and the revolu-

tionary pace that are required for its attainment were secured. It may be said without exaggeration that the last two years, beginning with the latest Congress of the Communist Party, have been marked above all by the tremendous effort and the strenuous political struggle arising from the problem of agricultural development. This struggle may be said to have been concluded by the resolutions of the XVI Conference of the Communist Party and of the V All-Union Congress of Soviets, which ratified the Five-Year Plan and thus sanctioned a far-reaching program of socialist reorganization in the village. "Bourgeois society drains the blood from the peasant's heart and the brain from his head, and it throws his body into the boiler of capitalism, that modern alchemist"—those were the terms in which Marx described the fate of the village under capitalism. Socialist society and the socialist road to progress open new perspectives to the village and the peasantry. The Soviets have approached the point of destroying that "idiocy of village life" which has been bred for centuries; of bridging the rift between the city and country; and of starting, through socialist reorganization of the village, the transition to a communist society, free of class divisions. The program of social and technical reconstruction of agriculture, as embodied in the Five-Year Plan, means that many milestones have been passed on the road toward the great goal.

3. THE SCOPE OF AGRICULTURAL SOCIALIZATION UNDER THE FIVE-YEAR PLAN

We shall now see how this general conception of agricultural advance and socialist reorganization in the village is reflected in the concrete provisions of the Five-Year Plan and in the practical program of economic construction in the Soviet Union; on what scale the socialization of agricultural production has been arranged during the five-year period; and with what degree of success it has been practiced.

At the outset of the period the socialized sector in agriculture

was almost undeveloped. It is already clear that the agrarian revolution had completely swept away the large private manors of the nobility, as well as capitalist farming enterprises; and had brought about a radical leveling in the distribution of land ownership, as well as, partly, in the ownership of live stock and agricultural machinery. As a result of the agrarian revolution only a small number of large farms, chiefly model farms, were preserved. Their importance in agricultural production was slight. They confined themselves almost entirely to the production of high grade seed. On the other hand, the movement to develop collective farming in the preceding period did not secure a sufficient financial or technical support and, therefore, had not proceeded on a large scale. In 1927-1928, the entire planted area in the socialized sector amounted only to about 2.3 million hectares, or a bare 2 per cent of the total acreage under cultivation in the Soviet Union. The state and collective farms taken together supplied only about 4.5 per cent of the total marketable agriculture production, and only about 7.5 per cent of the marketable portion of the grain crops.

The Five-Year Plan provides for the development of the socialized sector in agriculture on a quite different scale. In accordance with the general policy of socialist reconstruction of agriculture, and with a view to hastening the greatest possible acceleration of the growth of agricultural production, the Five-Year Plan contains a tremendous program of agricultural development, collectivization of peasant holdings, construction of machine and tractor stations, and so on. It may be said without any exaggeration that this unprecedented program of socialization of agricultural production has put its impress upon the whole Five-Year Plan and given it a pronounced socialist character. The Five-Year Plan provides that the planted area in the socialized sector shall be increased by 1933 to 27 million hectares, as against the 2.3 million hectares in 1927-1928. Of the total, 5 million hectares will be planted by state farms, and 22 million by collective farms. This means that, under the program, by the end of the five-year period the socialized sector

will include 18 per cent of the total area under cultivation and will supply 17 per cent of the total gross agricultural production; almost 20 per cent of the gross grain production, and 43 per cent of the marketable grain crop.* It is hardly necessary to point out the profound importance of the transformation that will affect the entire structure of agricultural production through the building of the socialized sector on such a scale—nor what a revolution is implied in all aspects of village life.

It should be pointed out that this progress means that about 6 million peasant holdings, including about 20 million persons,** are to give up individualist methods in farming and pass over to collective production in 1932-1933. Allowing for the regular large annual increase in the agricultural population of the Soviet Union, this means that the number of peasants on individual farms will be nearly stabilized. It must be clearly realized that not a single peasant holding, nor even one peasant, gives up the individualist form of farming without a long and profound preliminary consideration of all pros and cons; sometimes not without a hard struggle in the family. Therefore, if 6 million peasant families, representing 20 millions of the rural population, will have been won over to collective methods of farming, there will be, in addition to an economic transformation of the first importance, a profound change in the ideology of the peasant masses.

It would be superfluous to dwell at length on the particular importance which such an accelerated growth in the socialized sector will have in the reconstruction of the agricultural

*Since this was written the process of collectivization has been greatly accelerated. In 1928-1929, the second year of this period, the accomplishment exceeded the original provisions of the Plan for 1932-1933. Of the total area of 90 million hectares sown in the spring of 1930 (as of June 25) the socialized sector comprised almost 36 million hectares, or 40 per cent, *i.e.* more than twice the proportion contemplated for the end of the period in the Five-Year Plan. Of the 36 million hectares in the socialized sector 33.045 million are in collective farms and 2.034 million in state farms. Under the revised estimate, this last will increase to 7.6 million hectares in 1930-1931.—*Ed.*

** In accordance with the upward revision of the socialization plan (see preceding note) the number of persons passing from private to collective production will at least be doubled and will probably exceed 40 millions.—*Ed.*

production of the Soviet Union. It is enough to indicate that the socialized sector is the first to carry out the mechanization of farming on a large scale. It was the pioneer in the introduction of tractors into agriculture in the U.S.S.R. and it is on this land that the use of chemical fertilizers and the whole system of agricultural improvements are most widely applied. According to the estimates of the Five-Year Plan there will be at least 170,000 tractors and new agricultural machinery to a total value of about 900 million rubles in use in the socialized sector by 1933.* Mineral fertilizers will be applied to its entire area planted in industrial crops and to 25 per cent of the area planted in grain. As it will benefit from all advantages of large-scale farming, the socialized sector is expected to bring about an increase in the crop yield double that which will be obtained on individual farms.

Even more obvious is the *political and social* significance of the successful development of the socialized agricultural sector on the scale provided in the Five-Year Plan. The fact that 43 per cent of the grain to reach the market will come from the socialized sector will radically change the whole system of relationships in the market for agricultural products. Through the play of economic factors, which is the only effective way, it will radically diminish the possibility of kulak speculation, and any attempt on their part to challenge the government system of regulation of grain prices and grain supply. The heavy fist of the socialized sector in agriculture will deal a final and crushing blow to the capitalist top of the peasantry.

Such are the provisions of the Five-Year Plan for the socialization of agriculture. It is extremely instructive to inquire into the results of those estimates when tested by actual reality: that is, into the actual achievements in the year 1928-1929, and the working plan for 1929-1930. In discussing industry, we have had more than once to notice that the actual accomplishments have been decidedly ahead of the estimates, which once appeared to many bold, exaggerated, even fantastic. The same thing is

*This program has been greatly increased.—*Ed.*

true, and to an even greater extent, in regard to building up the socialized sector in agriculture. Every day the picture of the growing state and collective farms, and the machine and tractor stations becomes more thrilling, as also does the tremendous enthusiasm it awakened among the broad masses of the small and middle peasantry. Every day also brings new reports of the desperate resistance of the capitalist top of the peasantry. The great struggle for agricultural socialization is unfolded on a scale and at a rate that greatly exceeds the boldest anticipations of the Five-Year Plan. The facts here speak for themselves.

Under the Five-Year Plan it was proposed to increase the area under cultivation in state farms to 5 million hectares by 1933, with expectations of attaining 2.1 million hectares in 1929-1930. However, thanks to the success achieved in the first year of the period embraced by the Plan, as well as to capital investments twice as large as originally provided, and to the tremendous interest taken in the development of state farms by all the economic regions and national republics in the Soviet Union, it has been possible to project a revised program which, though much increased, is still entirely feasible. The area in state farms is already 5.5 million hectares and it will be further extended. The original estimates provided for an investment of 203 million rubles in state farms in 1929-30. The program for 1929-30 provided for an investment of 365 million rubles.* The number of tractors to be supplied to state farms has been increased from the original estimate of 7,000 to 20,000. The quantity of mineral fertilizers to be supplied has been likewise greatly increased, and so on. In a number of higher agricultural schools special emergency departments have been established for training highly qualified workers for the state farms. There are also intensive courses for machinists and tractor operators. A number of highly skilled workers have been sent to Western Europe and America to study the manifold problems relating to large-scale mechanized farming. In the spring of 1929 Mr. Campbell, owner

*According to the latest available data (as of June 28, 1930) the total long term appropriations for state farms reached 185.8 million dollars in 1928-1929 and will amount to 856.2 million dollars in 1929-1930.—*Ed.*

of one of the largest grain farms in America, was specially invited to the U.S.S.R. for consultation. We may note, however, that state farms have already been developed in the Soviet Union on a scale three times as large as Campbell's enterprise (as, for instance, the "Gigant," in Northern Caucasus).

Successful development of state farms, however, has not been merely quantitative. The planting campaign of the fall of 1928 and the spring of 1929 and the harvesting campaign in the fall of 1929 have demonstrated that the Soviets have entrusted this most important section of the economic front to reliable organizers and excellent workers. Notwithstanding the fact that this venture was entirely new, the whole cycle of agricultural labors in the newly organized large state farms was completed not only with great enthusiasm, but in a highly orderly manner. Some of these new large-scale farms, using mechanical power alone, provided with motor transportation facilities, equipped with all the required agricultural machinery, and directed by enthusiastic workers for the socialist reorganization of the village, offer a fascinating picture, marking the beginning of a new chapter in the economic and social history of the Soviet Union. There can be no doubt that in another year or two the giant socialist grain farms will acquire an enormous popularity beyond the Soviet boundaries as well as within them. Already this year the best among the newly created state farms record visits from a number of foreign tourists and students. Foreign labor delegations, in particular, were elated over those visits.

As for the collective farms, actual accomplishments there have been running ahead of the Five-Year Plan even more rapidly than is the case with the state farms. As stated above, it was proposed to increase the area under collective farm cultivation to 22 million hectares by the end of the five-year period, as against 1.9 million in 1927-1928. In the second year of the period, that is, in 1929-30, the collective farms were expected to cultivate 6 million hectares. It is now obvious, however, that the popularity of the collective farm movement among the masses of the peasantry, and the attraction exercised by the

socialization of their productive processes was underrated. In 1928-29 the collective farms already embraced 5 million hectares, with a working program for 1929-30 providing for an extension to at least 30 million hectares, which will in all probability be exceeded.* In other words, in the second year of the period covered by the Plan the entire five-year program in regard to the building up of collective farms will be surpassed. Even more striking are the figures relating to the *number* of collective farms. On October 1, 1928, there were 38,000. They had increased to 61,000 one year later, and the figures for 1929-1930 anticipate a further increase to 89,000. The Five-Year Plan estimated that the number would reach only about 80,000 by October, 1933. Entire farm communities, villages, village groups, even entire districts rushed to join the collective farm movement. And what is interesting and important above all is that this impetuous numerical growth of collective farms is accompanied by a considerable strengthening of their basis. The large collective farm, operating with mechanical power, equipped with tractors and complex machinery, and working tens of thousands, sometimes hundreds of thousands of hectares of land, has now become the beacon for the mass of poor and middle peasants in the Soviet Union.

The actual accomplishments of 1928-1929 and the working program adopted for 1929-1930 have made it necessary to revise the anticipations of the growth of collective farms as originally estimated. This revision, however, is not at all along the lines predicted by bourgeois critics and the opportunist skeptics of the Right Wing: not at all was the rate and the tempo of socialization in agriculture reduced. On the contrary, they are considerably accelerated. And there is, perhaps, no exaggeration in the estimates of the leaders of collectivization in farming, who anticipate that by the end of the five-year period at least 50 per cent of the peasant holdings and 60 per cent of the total area under cultivation will be embraced in the collectivization move-

*The spring, 1930, sowing area alone reached 33 million acres in collective farms.—*Ed.*

ment in the principal grain producing regions of the U.S.S.R.*

Special interest is warranted in regard to those entirely collectivized regions which are now found in gradually increasing numbers in most diverse parts of the Soviet Union. That is, in regions where the entire peasant population and all farming units without exception have passed over to socialized production.

The Irbit district, in the Urals, where 135,000 hectares of fertile land, 110 villages, and a population of 19,000, are combined into five branches of a single socialized enterprise, affords a striking instance of such consummate collectivization, which has grown through local initiative, overcoming tremendous difficulties, and unfailingly finding the road toward a complete transformation of the whole system of agricultural production by entire regions. This particular group expects, by the end of 1929-1930, to have increased its straight collective area to 275,000 hectares; and that not a single village will by that time remain outside the collective organization. Nor is this the only instance of its kind. What has been accomplished here is only one of the many milestones that mark the glorious road of agricultural socialization. And it should be remembered that, whereas in the building of state farms we may avail ourselves of the experience and guidance of large-scale mechanized farming in North America, for a certain period in the collective farm movement, we are starting a new field, without precedent in the history of mankind.

The extremely rapid growth of collective farming is not supported, of course, solely by the initiative of the peasant-masses. It also receives the powerful aid of the Soviet state. Under the estimates of the Five-Year Plan, government aid to the development of collective farming was provided for the year 1929-1930 to the sum of 200 million rubles. It will actually amount to 320 million rubles. There has been an increase, as compared with the provisions of the Plan, in the number of tractors sent to

*Present indications are that these hopes of the leaders of the collectivization movement will be surpassed.—*Ed.*

the collective farms, the quantity of mineral fertilizers supplied, and the provision of agricultural machinery, motor transportation facilities, and so on. The steadily rising tide of collectivization is thus met by organized support coming from above. The Soviet state does not fail in its mission of socialist reorganization of the village.

Even before the preparatory work on the Five-Year Plan was finally completed, the idea of the so-called inter-village stations for the supply of machine and tractor power had become very popular. It has been embodied in the principles which will guide agricultural reconstruction. Before applying this idea on a nation-wide scale it was given a practical test in one of the most important state farms, near Odessa, that bearing Shevhenko's name. The substance of this form of organization is as follows: An inter-village machine and tractor station, operated by the state, equipped with a sufficient number of tractors and attachments and provided with an efficient corps of workers, enters an agreement with a number of surrounding villages under which it undertakes the task of mechanical cultivation and harvesting over the entire area embraced in those villages, while the peasants who are the other party to the contract undertake to contribute their labor to all agricultural processes, in a strictly determined order, and to dispose of the entire crop yield, compensation for mechanical work being, of course, deducted. We thus have the first stage of wholesale collectivization, resulting in great improvement in the methods of production, and increased crop yields, the training of the peasants to elementary forms of collective economy, and the preparation of the ground for straight collectivization of agricultural production. The popularity of the machine and tractor stations increases very rapidly.

While the Five-Year Plan was being drafted it was impossible either to estimate precisely the scale on which the development of these stations would proceed, or to determine in what districts they were to be located. After a thorough supplementary inquiry into the matter, the Soviet Government approved the construc-

tion, beginning with 1929-1930, of 200 machine and tractor stations, which are to serve an area of up to 5 million hectares. More stations are to be gradually established later on, so that the total number, to serve an area up to 40 million hectares, shall have reached one thousand by the end of the five-year period. The stations are being created in all main agricultural regions. The greatest number to be completed in 1929-1930 are located in the Ukraine, Northern Caucasus, the Volga region, with some elsewhere. Five thousand tractors are already being shipped as initial equipment of these stations; and about 30 million rubles have been appropriated for the initial work implicit in their organization. It is needless to insist further upon the exceptional importance of this development as part of the general program of the advance of agriculture and its reconstruction on a socialist basis.

There was a time, not very long ago, when the masses of the peasantry were watching with diffidence the experiments of the Soviet Government in the field of agriculture. There was a time when the capitalist elements in the villages and, more generally, the enemies of the Soviet régime could use in their anti-Soviet propaganda the bogey of forceful enlistment in communes, which they depicted as a sort of military settlements. The situation has radically changed in this respect. It is no longer possible to scare anybody in the Soviet village—except its kulak top—with the collective method of farming. There is no longer any need to carry on propaganda in favor of socialized farming, or to convince anybody of its value. On the contrary, the situation which we are now facing is that of a Soviet industry, not yet quite mature and not yet in a position to cope with the task of supplying machines, tractors, and mineral fertilizers to all the collective farms which have been growing spontaneously; and the further growth of which is handicapped only by the inadequate development of machine technique, and the shortage of trained workers. The everyday experience of this work shows, what the reports to the V All-Union Congress of Soviets have demonstrated most strikingly:

that in the depths of the Soviet village the ice is breaking. The transition to socialized production has begun on a wholesale scale, and is progressing at a steadily quickening pace. It is not only the poor peasants who have been joining the collective farms, but the middle peasants also. That is the most important political and economic lesson of the year 1928-29. It is most conspicuous in those districts in which straight collectivization has been carried out, and of which there are now quite a number. This has been pointed out with great force by Stalin in his article summarizing the political record of the year 1928-29, which he designated as "the year of the great shift."

"What is it," he asks here, "that makes the *newness* of the collective farming movement of our time? What is new and of deciding importance in that movement," he answers, "is that they are no longer individual peasant groups that join it, as was the case before, but entire villages, districts, and even regions. And what else does this imply than that *the middle peasants are joining the collective farms?*"

This strikes at the very root of the great agricultural shift which was the most important attainment of the Soviet government during the past year.

The ice is also breaking in the attitude of the best spokesmen of bourgeois agricultural science. The *Ekonomicheskaya Zhizn* published an extremely interesting letter from Professor Chayanov, one of the most prominent students of agricultural economy, who deemed it his public duty to make a public statement of the profound change that had taken place in his views on the problems of collectivization in agriculture.

"A number of my colleagues in academic work," Professor Chayanov writes, "have lately noted my writings on the organization of state farms and collective farms, and my eager advocacy of the idea of state grain factories and of the organization plan of the Digorsk unit. They have requested an explanation from me as to what principles have led me, who has been among the apologists of peasant economy and the author of a theory of family economy, to take up the treatment of a subject foreign to me. They were interested in knowing whether I was doing it as a matter of official duty, or because of some change in my views."

Professor Chayanov then proceeds to declare his complete agreement with the accelerated building of state farms and the mass transition of peasant holdings to large scale collective farms. The title Professor Chayanov gave to his letter was "From Peasants' Class Co-operatives to Socialist Reconstruction of Agriculture." It is along these lines that the thought of the best representatives of agricultural science, who have spent scores of years in the search for a way of promoting the productive forces of agriculture in what once was the Russian Empire, evolves. This peculiar and fertile ideological transformation can only be explained by the enormous success achieved in the socialization of Soviet agriculture.

4. LAND ORGANIZATION AND THE INDUSTRIAL EQUIPMENT OF AGRICULTURE

Such is the program of building the socialized sector in agriculture, as it is embodied in the Five-Year Plan; and as it is carried out in practice. It is the central link in the effort toward the technical reorganization of agriculture on a socialist basis—its finally deciding aspect. There are, however, other problems in the way of agricultural reconstruction. There yet remain millions of individual peasant holdings, toward which the Soviet state assumes the duty of stimulating the progress of production, and of guiding them in their economic advance. A few figures bring out the magnitude of the task to be performed in agriculture outside the socialized sector.

The preliminary estimates of the Five-Year Plan evaluated the total capital to be invested in agriculture in the five-year period (including the private investments of individual peasants in structures, live stock and implements) at about 23 billion rubles, of which about 6 billion would come directly from the state through budgetary appropriations and long-term credit grants. Of the total of 23 billion rubles, a considerable portion will obviously serve merely to replace the existing property investments of individual peasant holdings. Only a compara-

tively small part would be subject to state planning and its regulating influence. Of the total of 6 billion rubles of state investments, somewhat over 2 billions were to go into the socialized sector, that is, into the development of collective and state farms, and of machine and tractor stations. Those were the estimates of the Five-Year Plan. The socialized sector in agriculture has actually grown faster than anticipated; and this, as has been pointed out above, has been due both to a broader initiative of the peasant masses and to an increased financial and technical support from the Soviet state. As a result, the capital investments in agriculture as a whole, and in the socialized sector in particular, will exceed the estimates of the Five-Year Plan.

We shall now outline the main efforts of the Soviet state toward furthering the productive forces in agriculture as a whole, including the individual sector.

We must, in the first place, discuss a group of problems which may be combined under the general heading of "the organization of agricultural territory." This includes land organization and demarcation, reclamation, irrigation, the extension of the area under cultivation, and also, partly, the regional distribution of agricultural activities. This group of problems of territorial organization, all very complex and requiring large resources and considerable time for their solution, are of prime importance for agricultural construction as a whole. The fact that the Soviet state inherited from the tsarist régime a truly barbarian land organization should also be considered with borders of private holdings cutting across the agricultural area in all directions; with strip holdings; holdings parceled, and scattered over long distances; insufficient roads; afforestation of sands and ravines and vast areas lying waste owing to the absence of reclamation and irrigation work on an appreciable scale, etc. This lack of organization of agricultural territory is a source of tremendous economic loss to peasant farming in the Soviet Union. The solution of its problems is bound to hold

an important place in the general scheme of agricultural reconstruction.

Land organization has been actively carried on in the Soviet Union since the beginning of the period of peaceful economic development. But in the past it was tied up with the agrarian revolution; and its fundamental object was to devise the best forms of land organization for villages and individual peasant holdings, which were passing from the archaic three-field system to the multiple system of crop rotation. Now that a tremendous program of socialized agricultural production and collectivization of individual peasant holdings is being carried into practice and inter-village machine and tractor stations are being built on a scale which means the breakdown of the age-long forms of private peasant economy and of its primitive technique, it is perfectly obvious that the problems of land organization take new form, and their solution must be in accordance with the general trend of agricultural reconstruction. In other words, the problem which confronts the Soviet village and the land organization agencies is that of passing from land organization at the request of individual villages to the organization of large tracts of farming territory in accordance with a general plan and in full conformity with the progress of socialization and mechanization in agriculture. More than 100 million hectares of land will be embraced in such various aspects of territorial organization as land organization among individual holdings, elimination or reduction of distant holdings, elimination of strip holdings, introduction of crop rotation, assignment of land for collective and state farms, and so on. Under the Five-Year Plan, the Soviet state will invest over 500 million rubles in this work of land organization, and it is quite likely that the progress of agricultural socialization at a rate faster than anticipated will cause land organization too to be carried on on a scale larger than provided for by the Plan.

The same group of problems further includes reclamation work in connection with the draining of swampy lands and the irrigation of arid areas. Reclamation of various kinds has



Peasants on a Collective Farm in the Orenburg District Returning from the Fields. The Inscription on the Banner Reads: "Our Common Work on Common Land is the Guarantee of Good Crops" (see pp. 135-178).



Sailors of the Baltic Fleet on Leave Helping Peasants on a Collective Farm Repair a Tractor (see pp. 182-189).



Noting Results of Socialist Competition in Northern Cable Plant in Leningrad (see pp. 119-134).

been planned for this period to embrace over two million hectares. About 80 per cent of this area is included in draining projects designed to increase the production of feed as a basis for the development of intensive animal husbandry in old settlement districts. Among the several individual reclamation projects we shall mention the first stages of the colossal plan of mechanical irrigation of the arid region east of the Volga. The plan is designed to do away with what is known as the "desert tongue," which reaches the Volga from the direction of the Caspian Sea. This project, when carried out, will have tremendous economic results. Implicit in the project is the utilization of water from the Volga for the irrigation of an area of from 1.5 to 2 million hectares. In the present five-year period, however, it is only planned to carry out the work over an experimental area of some tens of thousands of hectares, in order to test the value of the entire project, which will probably be carried out in full some time after the end of the present period. Another group of reclamation projects relates to the mechanical irrigation of the vast steppe regions of the Ukraine and is based upon the utilization of hydro-electric power supplied by the Dnieper works. The total cost of reclamation in the five-year period is estimated at about 500 million rubles.

Separate mention must be made of the great system of irrigation projects in Central Asia and Transcaucasia, which are directly related to the cotton problem. The Five-Year Plan deals with the vast problem of the cotton supply in the Soviet Union. Until now the U.S.S.R. has imported from America and from Egypt one-half, or even somewhat more, of all the cotton consumed in its textile industry. It has thus had every year to transfer to the cotton growers of Egypt and America enormous amounts in foreign exchange, and it has also had to bear the burdensome effects of all fluctuations in the cotton market. The Soviet Union, however, has every possibility of greatly expanding the production of cotton of the highest quality in its sub-tropical regions. It is, therefore, proposed to more than double the production of this commodity during the five-year

period; and thus greatly to reduce or even almost eliminate dependence upon the world market. This implies the extension of the area under cotton cultivation from 750,000 hectares in 1927-1928 to 2.04 million hectares by the end of the period. This will require, in turn, the completion of great irrigation projects in all the cotton growing regions of the country. The total cost of this work is estimated at slightly below half a billion rubles. As early as 1929-1930 the area planted in cotton in the U.S.S.R. will attain to between 1.4 million and 1.5 million hectares. The tremendous importance of this task, the amount of capital to be invested, and the technical complexity of the work makes this irrigation program rank beside such undertakings as the Dnieprostroy project and the great series of metallurgical plants to be constructed. Those who follow the Soviet press carefully will see the exceptional interest devoted to the cotton problem in general and particularly to the irrigation projects in the cotton regions. It should also be borne in mind that these irrigation projects, as well as other plans of reclamation and land organization, directly affect the vast mass of individual peasant holdings and mean a radical improvement in the conditions of their productive work. It is enough to say that in the cotton-growing regions of Central Asia alone there are more than a million peasant holdings engaged in cotton planting and will thus be affected by the system of irrigation works.

In a discussion of problems relating to organization of agricultural territory a few words must be said in regard to the matter of increasing the area under cultivation, by making lands now lying waste available for productive use. There are, in the Soviet Union, enormous areas of suitable land which has not been utilized thus far; and this not only in the unsettled outlying districts, but also in such accessible places as the Volga region, the Ural region, etc.

Under the provisions of the Five-Year Plan, 15 million hectares of new lands, chiefly in the steppe regions east of the Volga, will be added to the productive area, with the aid of

the increasing use of mechanical power in agriculture. At the same time, the creation of a chemical industry and the production of fertilizers in the Soviet Union are new factors which permit the matter of extending the area under cultivation in the vicinity of industrial centers (in the Moscow region, in particular), to be taken up by making available waste lands and unproductive local forests.

We shall confine ourselves to this brief description of the most important and outstanding aspects of the work relating to the organization of agricultural territory in the Soviet Union. It is enough to outline the broad system of measures planned by the Soviet state in regard to the most difficult task concerned with the furthering of productive forces in agriculture.

Closely related to these measures is the program of industrial equipment of agricultural production. In the preceding pages we have described in detail the objects that must be attained in the most important industries, in regard both to capital development and current production. We have mentioned the important place assigned to the production of agricultural machinery and to the chemical industry. One of the most important factors in the reconstruction of Soviet agriculture is indeed the fulfillment of the program for supplying it with agricultural machines of various types. The total value of all agricultural machinery existing in the U.S.S.R. at the beginning of the present five-year period has been estimated at about a billion rubles. If the program of production of agricultural machinery which has been described above is completed, the total value of all machines in agriculture by the end of the five-year period will exceed 3 billion rubles. Since the adoption of the Five-Year Plan the program for the production of agricultural machinery and tractors has been enlarged. Inasmuch as the intensity of utilization of each machine will greatly increase in the course of the five-year period, with the growth of collective methods in agriculture, the actual productive capacity of all agricultural machinery in the Soviet Union will increase considerably more than three-fold. The number of tractors in use

in agriculture, which amounted to 30,000 at the outset of the five-year period, has to be increased to 350,000 or 400,000 by its end. The experience of the year 1928-1929, the first year of the period embraced in the Plan, and the working program adopted for the year 1929-1930, demonstrate fully that the five-year program for equipping agriculture with machinery—the program of mechanization of agricultural production—will not only be fully completed, but will be carried even further than planned.

A factor of tremendous importance in the industrial equipment of agriculture and the reorganization of agricultural production is the birth of a chemical industry. In 1927-1928 the total production of all fertilizers amounted only to about 360,000 tons, and the Soviet Union ranked almost last among civilized countries in the use of fertilizers. In the preceding pages we laid particular stress upon the impetus given to the development of the chemical industry in the U.S.S.R. The main stimuli at work here are the needs and requirements of agriculture. By the end of the five-year period the domestic production of mineral fertilizers will reach 8 million tons, and this alone, even disregarding the imports of fertilizers, will promote the Soviet Union to a first place as a consumer of this commodity. Fertilizers will be applied to 25 per cent of the area planted in grain in the socialized sector. Their use will also be greatly increased in individual peasant farming, which will be of the greatest importance in the improvement of the conditions of production in Soviet agriculture and the increase of its output.

Among the measures designed to provide agriculture with industrial equipment, mention should be made of the development of industrial establishments engaged in the treatment of agricultural products. The development of such agricultural industries as sugar refining, flour-milling, and the industrial treatment of dairy and meat products, fruit, truck gardening, etc., will be of tremendous importance for the development of intensive agriculture and of rational utilization of agricultural products. The total amount of capital to be invested in the

building of these industrial plants for the treatment of agricultural products is estimated at about 1,500 million rubles during the five-year period. This development will be of particular importance in regions suffering from agrarian overpopulation.

These are the most important measures designed to provide for the organization of agricultural territory and the industrial equipment of agriculture. They will affect not only the socialized sector, but the whole mass of small and middle peasants. The actual requirements of Soviet agriculture are, of course, greater than will be met by these measures. This, however, does not diminish the significance of the program for reconstruction and the technical equipment of agriculture. The whole appearance of the Soviet village will be changed by the end of the five-year period, technically as well as socially.

5. ECONOMIC STIMULATION OF INDIVIDUAL PEASANT HOLDINGS

It is therefore perfectly preposterous for the bourgeois opponents of the Soviet economic policies and their Right-Wing understudies to raise the charge of underrating or ignoring the importance of the part played by individual peasant farming against the Communist Party of the Soviet Union. The bourgeois observers and the philistines of every description are alarmed by the decisive attack upon the capitalist top of the village. They will not or cannot see the great efforts exerted by the Soviet State to stimulate and promote the economic activities of the small and middle peasantry as a whole.

Nothing is farther from the Soviet economic policy than the creation of friction between the socialized sector in agriculture and individual farming; or than treating them as mutually antagonistic. Truly enough, the socialized sector and the capitalist top of the village *are* inimical and mutually exclusive. A struggle between the peasantry in the process of collectivization and the kulaks is inevitable, as, under Soviet conditions, is the ultimate victory of the village on the road to socialization over

its capitalist top. But the socialized sector is not even a slightly hostile force to the mass of poor and middle peasants. On the contrary, the entire work of strengthening the socialized sector in agriculture is determined by the idea that it shall exert a broad and systematic influence upon individual peasant farming and help promote its productive forces. The state and collective farms, and the machine and tractor stations have no tendency to become self-contained organizations, isolated from the individual peasants. Still less do they tend to flourish at the peasant's expense. They serve as centers of attraction for the individual peasant holdings and as sources from which flow agricultural knowledge and social influence. There is not the slightest foundation for the bourgeois legend of an alleged civil war going on between the socialized sector in agriculture and the millions of small and middle peasants. The social forces in the Soviet village are aligned in an altogether different manner. We see the collective and state farms and the machine and tractor stations, together with the still unorganized mass of the poor peasantry, in alliance with the middle peasants, for a struggle to overcome the class resistance of the capitalist top of the village. We must, therefore, brand as a bourgeois lie the contention that the economic measures outlined in the Five-Year Plan include no provision for the stimulation of individual peasant economy. The facts testify to the contrary.

Among the measures directly designed to stimulate the productive efforts of individual peasants, mention should be made first of the policy in regard to agricultural prices. Under the provisions of the Five-Year Plan, agricultural prices are to be maintained on a practically stable level, with small reductions only at the very end of the period. On the other hand, the level of industrial prices is to be lowered in the five years by at least 25 per cent. What is known as the "scissors," that is, the discrepancy between industrial and agricultural prices, will thus be reduced, to the advantage of the peasantry. The data relating to the first two years of the period demonstrate that this is being accomplished. Nor is this policy in regard to agricultural prices

an accidental development. It was determined upon by the government even before the Five-Year Plan was formulated, and it has been dictated by the desire to stimulate the individual peasants to greater production.

No less striking an illustration of the same tendency is afforded by the provisions in regard to the agricultural tax embodied in the Five-Year Plan and carried out in reality. Notwithstanding the greatly anticipated increase in agricultural production and in the incomes of the peasant population, the total amount of the agricultural tax will not only not be increased in the second year of the period, as compared with the first year, but will actually be reduced; and the increase to be effected in the subsequent years will be insignificant. Here are the figures showing the annual amounts of the agricultural tax as provided in the plan:

	Millions of rubles
1927-1928	350
1928-1929	400
1929-1930	375
1930-1931	405
1931-1932	435

Does this movement of the agricultural tax look at all like ignoring the production needs of the peasants, or underrating the importance of stimulating their productive efforts? The Soviet agricultural tax is, of course, based on a consistent principle of class discrimination. The law completely exempts from taxation the holdings of the poorest peasants, which form 35 per cent of the total. All others are subject to a rather steeply progressive rate of taxation, in accordance with their means. True enough, the Soviet agricultural tax weighs *rather heavily* upon the kulak holdings. The law even provides for so-called individual taxation, the heaviest of all, for such farming units as are clearly labor exploiting enterprises. This is in accord with the class policy of the Soviet Government. But it is altogether futile to represent the "inconveniences" resulting from the Soviet system of agricultural taxation for the capitalist top of

the village as affecting the village as a whole. On the contrary, the very basis of the agricultural tax is on the principle of the greatest possible stimulation of the lower and middle peasant groups' production.

There should, further, be no underrating of the part assigned to co-operation as a factor of organizing and stimulating agricultural production. At the outset of the five-year period agricultural co-operation embraced only some 35 per cent of the peasant holdings, including both co-operative marketing associations and producers' co-operatives. By the end of the period the membership of co-operatives will include 85 per cent of all peasant holdings. Agricultural co-operation will have grown into a powerful economic organization, with a large basic and working capital. It should be remembered that the peasants get almost all their supplies required for production, and for that matter other goods as well, through a co-operative system which forms a direct link between its members and the state industries, which is to say, with the Soviet cities. Let the farmers of any capitalist country tell how they are being robbed by capitalist middlemen of every description in the process of marketing and financing their products. Even under the Soviet economic system, as long as the facilities for co-operative organization are insufficiently developed, an individual peasant is liable to—and does—become heavily dependent upon the capitalist groups in the village, illegal credit, and so on. Soviet co-operative organization, which brings about union among the small and middle peasants and which uses the full force of its machinery to combat the capitalist elements of the village, is of invaluable service to the individual peasant. It frees him from the bondage imposed by the kulak and connects him directly with the powerful economic organization of the socialized sector. Nor should the fact that the powerful system of agricultural credit in the U.S.S.R. carries on its widely extended operations in organic contact with the co-operative organization be neglected. The enlistment of 85 per cent of the peasant holdings in the co-operative organization by the end of the five-year period must, therefore, be regarded as a

powerful factor in the organization and promotion of peasant production.

A special importance attaches to a new form of connection between the Soviet city and the village; a new form of government regulation of production as carried on by individual peasants. We refer to contracting.

It is only a few years since the origin of the idea of a preliminary agreement between the state and an individual peasant or group of peasants, for the delivery of a specified portion of the commercial grain crop. The system now embraces almost all industrial crops (sugar beet, cotton, flax). It is taking root in grain crop areas, and is beginning to extend to animal production. In 1929-1930, that is, in the second year of the present five-year period, nearly 90 per cent of the industrial crops, in an area of 5.5 million hectares, and 44 per cent of the grain crops (46 million hectares) have been covered by contracts of this type between the state and peasants or peasant producers' associations. While the system originated as a new type of marketing operation, it has been rapidly growing in importance in the process of production, as it implies a number of obligations for the state (which supplies the peasants who are party to it with technical resources), as well as obligations for the peasants to improve their methods of cultivation. It is, of course, only natural that the free market apologists should be horrified at the tremendous extension of the contracting system. Detached observers, however, as well as those who believe in a system of organized economy, can regard this system no otherwise than as a powerful instrument for promoting and directing the productive efforts of individual peasants.

We must repeat in this connection what has been said above regarding the scale on which it is planned to supply the village with machinery and mineral fertilizers. One may, of course, discourse as much as he pleases about the "degradation" of Soviet agriculture; it is a different matter when it comes to explaining this very peculiar kind of degradation—one that is accompanied by an impetuous growth of the technical equip-

ment of agriculture, and a vigorous advance in reclamation work, irrigation, land organization, and other projects promoting agricultural progress. There can be no doubt but that the large supplies of agricultural machinery, tractors, mineral fertilizers, selected seeds, and electric power, which flow into agriculture, and the industrial plants that are being developed for the treatment of its products (bacon factories, oil mills, canning plants, etc.) will prove to be of the greatest stimulating influence on peasant production.

Finally, account must also be taken of the educational and organizational work conducted by the Soviet state and all Soviet civic bodies. The entire system of Soviets, from the top to the bottom—the co-operative organizations, the organizations of the Communist Party, the labor unions, and a wide net of other Soviet civic organizations—are now exerting their creative efforts to hasten the pace of economic development in the country and to arouse millions upon millions of peasant families to struggle actively toward a higher level of agricultural economy. The promotion of the initiative of the peasantry is going on at a tremendous rate. Each economic region is endeavoring to devise its own form of organization, its own methods of stimulating the creative advance of the village. There is an extensive net of newspapers which serve the needs of this immense front. Suffice it to indicate that the *Krestyanskaya Gazeta* (the Peasants' Gazette) alone has a circulation of more than one and one-half million copies, solely through the subscriptions of individual peasants.

We could stop here in our description of the various aspects of the measures of the Soviet state and civic organizations designed to stimulate the productive efforts of the individual peasants and to increase the efficiency of their labor. It seems plain that any unprejudiced reader who takes the trouble of thinking over those measures will easily realize how remote from truth is the bourgeois legend to the effect that the Five-Year Plan and the actual course of economic construction ignore the needs of individual peasant farming. We should like, however, to point

out here, the movement of the national income. The estimates of the Five-Year Plan are based upon the assumption that the national income will increase during the period at about the same rate in the city and country. In other words, the policy followed is that of checking any further widening of the difference between the urban and the rural standards of living, a product of the entire course of capitalist development in Russia. The endeavor to prevent a further widening of that difference and bring about a gradual leveling of the standards of living through improving that of the village as the process of collectivization progresses, is the best evidence of that genuinely socialist interest in the needs of the village, which is characteristic of the entire economic policy of the Soviet state. The bourgeois press from time to time revives the legend of the neglected interests of the peasantry and of its ignored productive needs. It does so especially at moments of socialist offensive against the capitalist elements of the village. In fact, however, the checking of the exploiting tendencies of the kulaks, and the uprooting of capitalism in the village, not only do not imply a neglect of the peasant masses, but, on the contrary, mean a genuine promotion of their economic and social progress.

6. THE PRODUCTION PROGRAM IN AGRICULTURE FOR THE FIVE-YEAR PERIOD

We have now outlined the main objects of agricultural reconstruction and its general development in the period we are immediately facing; we shall now briefly summarize them. The policy of bringing about a transition to large scale agriculture will be consistently followed. It is based upon the use of machinery and the socialization of agricultural production and the active building of the socialized sector in agriculture. A vast program in regard to the organization of agricultural territory (land demarcation, reclamation, irrigation, etc.), in accordance with the general policy of promoting large-scale agriculture on the basis of machine technique and socialized production will

be carried out. The value of the machine equipment of Soviet agriculture will be trebled; and agriculture supplied with hundreds of thousands of tractors and attachments. A radical change will be effected to transform agriculture into a machine industry, with a great increase in the power equipment of the agricultural worker. A complex system of measures for the stimulation of the productive efforts of the broad masses of small and middle peasants will be consistently carried out. And they will be helped to adopt advanced methods of culture. Finally, on the basis of all these measures, the policy of checking the capitalist top of the village and of extirpating all capitalist elements from agricultural economy and from the system of social relationships in the village will be relentlessly carried out. Such are the general principles of economic policy, which form the basis of the Five-Year Plan and of the general economic development as they relate to agriculture. They are designed, in combination with political and cultural work conducted on a broad scale, to secure a tremendous advance of the productive forces in Soviet farming. The accomplishment of the program will immensely strengthen the position of Socialism in the Soviet Union and mark a most important stage in the onward march of the international socialist revolution.

We shall now consider those concrete objectives in regard to production and output which must be attained by the end of the present period, as a result of the elimination of the archaic forms of production now prevailing in the Soviet village, and of the reconstruction of agriculture on the basis of modern methods.

We shall mention first the increase in cultivated acreage which must be accomplished during this period. The Five-Year Plan provides that the total planted area shall be increased by 26 per cent in the spring of 1933. There shall be an increase of 17 per cent in the area under grain, and of 60 per cent, in that planted to industrial crops. This will be effected, on the one hand, through the opening of new lands to cultivation, especially, as has been indicated, in the eastern districts where

extensive culture prevails; on the other, through ending the incomplete utilization of available lands which still persists in the main producing regions. It should be observed that in the last two or three years the large kulak holdings have systematically followed the practice of withholding part of the land from cultivation, thus resisting the socialist offensive in the village and sabotaging the economic program of the Soviet Government. In the last few years winter crops have also been systematically ruined over large areas in such important producing regions as the Ukraine and the Northern Caucasus. As a result of all these factors, the planted area in 1928 remained almost on the same level as in the preceding year, not rising to the increase which is necessary to meet both the increase in population and the growing demand determined by the rapid industrialization of the country.

In 1929 the sabotage of the economic policy of the proletariat on the part of the kulaks did not abate, and they continued the extensive reduction of their planted acreage. In spite of this, and notwithstanding the ruin of winter crops over a large area in the Ukraine, the total acreage in that year was 6 per cent larger than in the preceding year. Thus, the growth of production in the socialized sector and on the land held by the mass of small and middle peasants more than offset the combined effects of kulak resistance and of unfavorable natural factors. A 6 per cent increase, however, was less than had been provided in the 1929 program, which anticipated an increase of 7 per cent. For this reason the working program for the year 1929-1930 (the agricultural year 1930) calls for such an increase in acreage as will make up for the preceding year's shortage as well as bringing the total to the estimates of the Five-Year Plan. A 10 per cent increase in acreage in 1930 is the fighting slogan of economic activity in the country. To attain it the greatest efforts of the government agencies, civic organizations, and the people at large are mobilized.

Another factor in the increase of agricultural production is the struggle for a larger crop yield, which has been given a

particular impetus after the famous resolution adopted by the Central Executive Committee of the U.S.S.R. The yield of the grain crops in the Soviet Union is very low. It fluctuates around 50 poods per hectare, sometimes falling far below that figure, sometimes rising somewhat above it, depending upon weather conditions. Owing to the archaic conditions of agricultural production, the extreme backwardness of agricultural technique, the scattering of the land among 26 million small producers for the market, and the great dependence upon natural factors, the crop yield increased very slowly both in tsarist Russia and in the U.S.S.R. during the first period of the Soviet governing. The annual increase has never exceeded a few per cent. This situation, which remained unchanged for centuries, affected the minds, not only of the people at large, but even of the most advanced persons in the country, to such an extent that the first drafts of the Five-Year Plan, prepared in the years 1926 and 1927, provided for an increase in crop yields of not more than 7 to 10 per cent in the entire five-year period. At its session of November, 1929, the Central Executive Committee of the U.S.S.R., however, after a thorough consideration of the matter, put to the country the task of securing an increase in yield of at least 35 per cent during the period.

It is plain that this decisive change of public opinion in the Soviet Union in relation to the matter of crop yield has not been accidental, and that it is intimately connected with the adoption of the policy of agricultural socialization and the promotion of machine technique and scientific methods on a large scale in agricultural production. It should be observed that while the increase in crop yield has been fixed at no less than 35 per cent for agriculture as a whole, it will be twice as high in state farms and collective farms as in individual peasant holdings. There is not a shade of exaggeration in the statement that the struggle for an increased crop yield has now become one of the most powerful rallying slogans for the masses in the Soviet Union. From every region and from all parts of the country we hear of the broad masses of peasants joining this struggle

and of public effort and initiative exerted in most diverse forms to further it. At the same time, scientific thought in the country has contributed an untiring creative activity to the movement.

Under the combined effect of the extension of planted area and the increase in yield, agricultural output will increase by 55 per cent in the five-year period, both in vegetable culture and animal husbandry. Grain production will rise by 50 per cent, and that of industrial crops will be doubled. Such a rate of increase in agricultural production, and especially grain production, will not only afford a solution of the problem of food supply and the accumulation of state grain reserves, of at least 300 million poods, but restore grain exports to a volume of about 500 million poods annually by the end of the five-year period. There is no need to emphasize the tremendous importance, political as well as economic, of such an agricultural advance. It will meet all the requirements of the rapid progress of industrialization and the greatly increasing consumers' demand; and at the same time, through the resumption of grain exports strengthen the position of the Soviet Union in its economic intercourse with capitalist countries.

It has been pointed out that the extension of the acreage under cultivation was lower in 1929 than was provided in the Five-Year Plan. Likewise, the total increase in agricultural production was only 2 or 3 per cent, instead of the 5 per cent provided for under the working program for 1928-1929. In contrast, the growth of industrial production and capital investments in national economy has been proceeding faster than estimated in the Five-Year Plan. Here is reflected one of the chief difficulties of economic planning at the present state of economic development in the Soviet Union. Agricultural production is scattered among 26 million small, often infinitesimally small, peasant holdings, and is greatly exposed to the action of natural factors. In no sense, however, does this warrant the conclusion that planning and guidance are impossible here; nor does it dictate the necessity of yielding to the elemental forces and changing the Soviet economic policies. On the contrary, the only conclu-

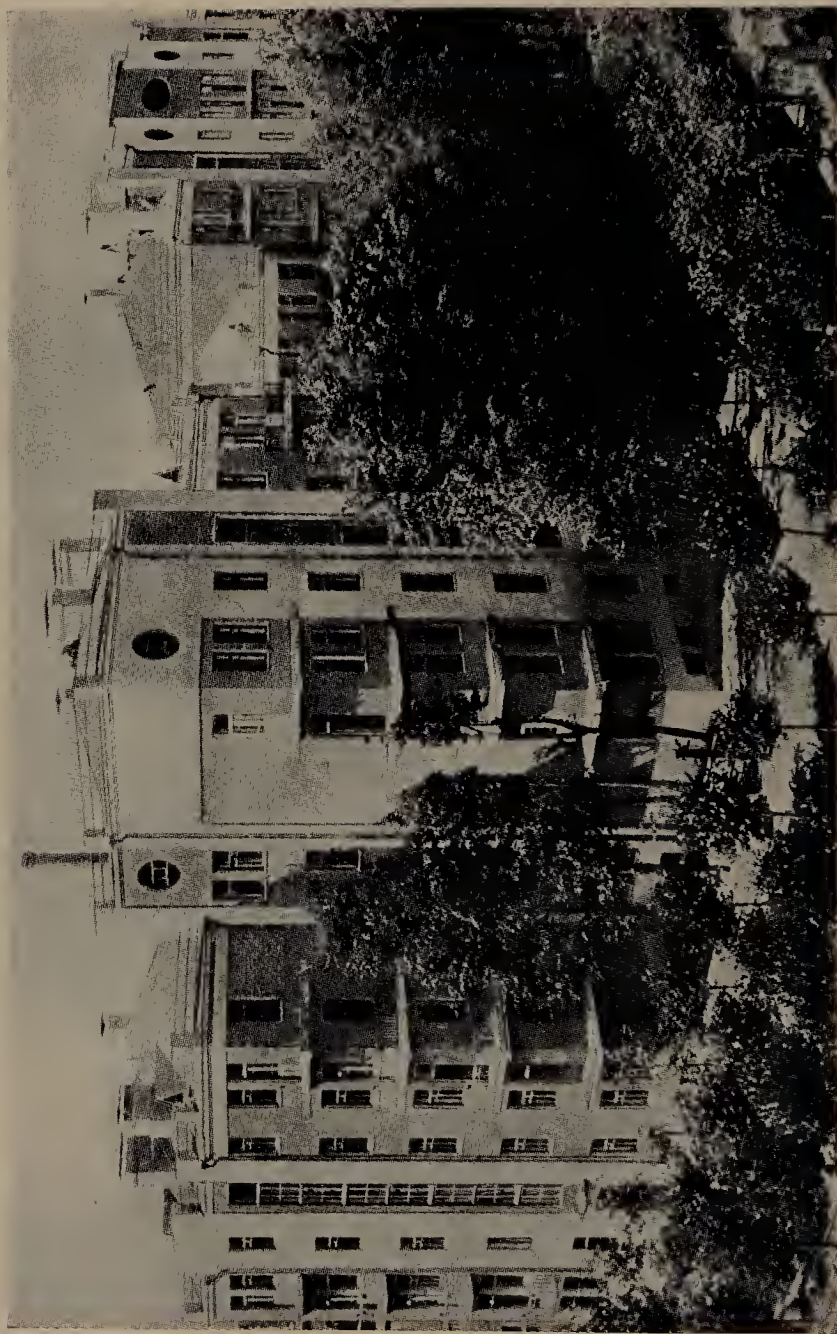
sion dictated by the lag of agricultural growth behind the progress of industrialization is the necessity of an increasingly consistent and persevering concentration of the efforts of government and civic agencies to solve the great problems of the radical reconstruction of agriculture. This conclusion has been fully embodied in the working program for the year 1929-1930. We have already described the powerful mobilization of effort for furthering socialization in agriculture, which is now progressing at a rate ahead of the preliminary estimates of the Five-Year Plan. We have also shown that the provision of tractors, agricultural machinery, and mineral fertilizers for the villages has been likewise progressing faster than anticipated.

The technical and social reconstruction of agriculture in a country such as the U.S.S.R., spreading from the Arctic to the sub-tropical zone, the task of transforming 26 million peasant holdings into mechanized, scientific, large-scale agricultural enterprises, of overcoming age-long inertia in the face of elemental forces, form together an exceptionally difficult problem. Its fulfillment requires much time, enormous capital investments and the most strenuous effort of the masses of the people, as well as all scientific bodies and government agencies.

We may well conclude here our discussion of the principal problems relating to the advancement of productive forces in agriculture and its socialist reconstruction in the Soviet Union. There is no need to summarize this discussion, inasmuch as all fundamental ideas and all basic facts have been presented above, we believe with sufficient clarity. We only wish, in conclusion, to call attention to the tremendous significance, universal and historic, of the socialist reconstruction of the village which is carried on in the Soviet Union on such a large scale. It is a new step in the advance of the world revolution of the proletariat, and in the world struggle for the establishment of a socialist society. The many countries where capitalism now rules; and especially the hundreds of millions of people in the colonial countries, who are now rising for a decisive struggle against the



Locomotive Assembly Section of the Kolomna Plant of the United Machine-Building Industries (see pp. 189-222).



Workers' Apartment Houses Recently Built at Ivanovo-Voznesensk, the Textile Center (see pp. 223-233).

growing burden of imperialist exploitation, will also—and on the day after the bourgeoisie has been overthrown—be confronted with the gigantic task of socialist reconstruction of the village and socialist re-education of the peasantry. The socialist re-organization of the village as it is now carried out in the Soviet Union, not only strengthens the foundations of the dictatorship of the proletariat and the position of socialism within the country; but it also marks the road of socialist development which will have to be followed by hundreds upon hundreds of millions of people in the West and in the East, after the overthrow of the rule of capital. It is, therefore, only natural that the young socialist sector in Soviet agriculture has been drawing the most intense interest of the toiling masses of the world, as well as the rabid hatred of the defenders of capitalism.

CHAPTER VII

THE WORKER-PEASANT BLOC AND THE ECONOMIC DEVELOPMENT OF THE U.S.S.R.

IN the preceding discussion it was shown how, in the actual process of economic reconstruction of the Soviet Union and in the economic program of the five-year period, the problem of the worker-peasant bloc is being solved. The plan for the socialist industrialization of the country, the plan for development of agricultural production and that for the socialist reorganization of the village imply in their very essence the necessity for maintaining and strengthening that union between the proletariat and the peasantry which, according to Lenin's famous expression, constitutes "the highest principle of the dictatorship." However, it is precisely along these lines that attacks are made on the present economic policy of the Communist Party of the Soviet Union and on the Soviet Government. These attempts, coming from the opportunist factions of every shade, charge the Five-Year Plan with nothing less than ignoring the interests of the worker-peasant bloc. The matter is of such outstanding importance that we must, at the risk of some repetition, pass in a general review all the problems that relate to it.

1. SOME HISTORICAL OBSERVATIONS

The doctrine of the hegemony of the proletariat, the union of the working class and the peasantry, and of the leading part to be played by the proletariat in that union, is one of the most important and valuable elements of the revolutionary conception of Leninism, in which the central point is the dictatorship of the proletariat and the requisites for establishing and strengthening it. This doctrine is the contribution of Russian Bolshevism

to the system of ideas which form the fighting equipment of the proletarian movement of the world; and herein lies its historic significance. We shall take the liberty of quoting at some length from Stalin's famous work, *Leninism*, in order to show the place which the idea of the worker-peasant bloc holds in the system of Leninism, the system which forms the basis of the economic policy of the Soviet Government. Stalin writes:

Some think that the essential foundation of Leninism, its starting point, is the peasant problem, the rôle of the peasantry. This is absolutely wrong. The essential foundation of Leninism, its starting point, is the question of the dictatorship of the proletariat, the question of how that dictatorship is to be established and strengthened. The peasant problem, the question of how the workers in their struggle for power are to secure the support of the peasantry, is a subsidiary one.

Even so, though subsidiary, the peasant problem is of vital importance to the proletarian revolution. It was on the eve of the Revolution of 1905 that Russian Marxists began to pay serious heed to the peasant problem. At this time, the Party was faced with the immense tasks of the overthrow of tsarism and the establishment of proletarian supremacy; and the question of finding an ally in the imminent bourgeois revolution became a pressing one for the proletariat. Later, in 1917, the peasant problem in Russia became a matter of still more urgent importance, for in the days of the proletarian revolution the question of the dictatorship of the proletariat—how it was to be established and maintained, what allies the proletariat could find—had become actual. Obviously, those who are getting ready to seize and hold power, cannot afford to be indifferent about the possibility of finding powerful allies.

In this sense, the peasant problem is part of the general question of the dictatorship of the proletariat, and as such it constitutes one of the most vital elements of Leninism.

The parties affiliated with the Second International have, as a rule, been indifferent to the peasant problem, and have even been antagonistic to its discussion. This attitude has deeper reasons than the peculiarities of agrarian conditions in western Europe. The main reason is that these parties do not believe in the dictatorship of the proletariat. They are afraid of revolution and have no wish to lead the proletariat to the conquest of power. Now, one who dreads revolution, who does not wish to lead the proletariat to the conquest of power, is not likely to be interested in finding allies for the proletarians. To such persons, the question of revolutionary allies will seem to be subsidiary, to be up in the air. The sarcastic attitude displayed toward the peasantry question by the leaders of the Second International is regarded by them as a praiseworthy one, as a sign of the genuineness of their Marxism. Really,

there is no trace of Marxism in such an attitude, for, on the eve of the proletarian revolution, indifference to so important a problem as the peasant problem is tantamount to the repudiation of the dictatorship of the proletariat, and is an open betrayal of Marxism.

In virtue of the special conditions of its existence, the peasantry has certain revolutionary possibilities. Are these already exhausted? If not, is there any justification for the hope that they can be turned to account on behalf of the proletarian revolution? Is there any hope of transforming the peasantry or, rather, its exploited majority, from a reserve of forces for the bourgeoisie (which the rural masses were in the days of the bourgeois revolutions in the West, and still are in that part of the world) into a reserve of forces for the proletariat? Can the rural masses become allies of the urban workers?

The Leninist answer to this question is in the affirmative. The Leninist answer is that as regards the exploited majority of the peasants there exist revolutionary possibilities which can be turned to account in support of the dictatorship of the proletariat. The history of the three Russian revolutions confirms this deduction abundantly.*

In fact, contrary to the quasi-Marxian disdain of the peasant problem and that of the worker-peasant bloc in the proletarian revolution which prevailed in the Second International, the Bolsheviks, during nearly three decades of revolutionary struggle against tsarism and of theoretical revolutionary effort, have evolved and verified this doctrine as a deciding element in the revolutionary proletarian advance upon the mainstays of capitalist society. It is along these lines that the most intense struggle has been waged between Bolshevism and Menshevism; that the Bolsheviks have fought against Trotsky's famous idea of a "permanent revolution," an idea based upon a misunderstanding and underestimating of the rôle of the peasantry as an ally of the proletarian revolution and of the rôle of the working class as a guide to that ally. The peasant problem, the agrarian program, the doctrine of the worker-peasant bloc have held a place of prime importance in the work and the struggle of Bolshevism from its origin down to and including the Revolution of 1917.

This concern of Bolshevism with the theory and practice of the worker-peasant bloc was not only not weakened after the

* Joseph Stalin, *Leninism*, pp. 122-123.

October Revolution but has even been strengthened since. It was then that Bolshevism was immediately and acutely confronted with the great historical problem, not only of conquering, but also of maintaining power in a country with a population overwhelmingly peasant, while surrounded on all sides with hostile capitalist countries. The struggle against the so-called Left Communists over the Brest-Litovsk peace treaty, the transition to the New Economic Policy, the unyielding resistance to the attempts at instilling into the economic policy of the Soviet Government elements borrowed from the Trotskyist theory of permanent revolution (super-industrialization advocated by Trotskyism, Preobrazhensky's famous doctrine of "primary socialist accumulation," etc.) the great attention given to promoting the productive forces of peasant economy and to advancing the standard of living of the poor and middle peasantry—all this has been dictated by a profound realization of the great revolutionary implications of Lenin's teachings in regard to the worker-peasant bloc.

In the process of revolution, those teachings have passed through three great stages.

The first, which embraced the period from 1905 to February, 1917, had the motto "together with the peasants, with the bourgeoisie neutralized, against the Tsar and the landlords, for the victory of a bourgeoisie-democratic revolution." For the second stage, which extended from March, 1917, to the end of 1918, the characteristic motto was "together with the poorest peasants, with the middle peasants neutralized, against capitalism in city and in country, for the rule of the proletariat." As early as November, 1918, Lenin gave the formula for the third stage in the evolution of the worker-peasant bloc in the Russian Revolution: "A way of reaching an accord with the middle peasant must be found, without for a minute giving up the struggle against the kulak, and relying only on the poor peasantry." At the beginning of 1919 this slogan was proclaimed with the utmost force by the VIII Congress of the Russian Communist Party, which directed that the action of the party

and the Soviet economic policy should progress toward socialist reconstruction, with the poor peasantry as their foundation, but in close contact with the middle peasants.

These brief historical references are cited to indicate the important place that the idea of a worker-peasant bloc holds in the revolutionary doctrine of Leninism and in the progress of the proletarian revolution in Russia. This should constantly be borne in mind by those who so lightly charge the Communist Party and the Soviet economic policy with disregarding the interests of the peasantry and ignoring the object of the worker-peasant bloc. At the same time it should also be remembered that the alliance between workers and peasants is not, in the revolutionary conception of Leninism, designed to serve for the perpetuating of classes, but for the attainment of the aims of the proletarian revolution, which mean, in final account, the complete abolition of social classes and the transition to a communist society free from class divisions. This militant revolutionary aspect of Lenin's idea of a worker-peasant bloc that is either forgotten or misunderstood by those opportunist elements of the Right Wing of the Communist Party, who like Bukharin and his followers, raise a clamor about the interests of the worker-peasant bloc being disregarded in the economic policy now followed by the Soviet Government.

2. THE ALLIANCE BETWEEN WORKERS AND PEASANTS IN THE PERIOD OF SOCIALIST RECONSTRUCTION

It is a matter of common knowledge that the acuteness of the class struggle in the Soviet Union has greatly increased in the last few years. This is a result of the desperate resistance of the capitalist elements in city and country to the victorious socialist advance along the entire front of economic reconstruction. We have already said that it is only the philistine, who does not look beneath the surface of events, or the direct spokesmen of capitalism, who explains the growing acuteness of the class struggle in the U.S.S.R. as a result of an alleged incitement on the part of Com-

munists and agents of the Soviet Government. Every serious observer of current life will realize that this growing acuteness follows logically and directly from the very fact of the socialist offensive, carried on by means of the active industrialization of the Soviet Union and enlisting ever larger masses of small producers in city and in country into the process of socialist reconstruction. This should constantly be borne in mind when an analysis is made of the concrete aspects of the worker-peasant bloc in the period of growing socialist reconstruction of the national economy of the Soviet Union.

The militant aspect of the worker-peasant bloc at this stage is the effort to secure a high degree of socialist industrialization in the country, a consistent progress of agricultural socialization and a relentless destruction of the very roots of capitalism in the Soviet village. What the present stage in the development of the worker-peasant bloc demands is not a general policy of advancing the growth of productive forces, increasing the commercial output of agriculture, etc., but a specific policy of socialist and technical reconstruction of agricultural production, based upon the successful march of socialist industrialization of the country and the strengthening of the position of the proletariat as a class and the furthering of its political activity. Those who do not adopt this objective cannot adhere to the present Soviet economic policy, nor to the Five-Year Plan of economic development.

The Soviets have passed through a period of a military and political alliance between workers and peasants: that was the period of the Civil War, the object of which was to secure the conquests of the October Revolution, and defend them and the Soviet order against a bourgeois-feudal restoration. The Soviets then passed through the preliminary stage of the New Economic Policy: that was the stage in the evolution of the worker-peasant bloc the objective of which was to restore agriculture through the advance of individual peasant economy, and the linking of city and country, chiefly on the basis of commercial relationships. Now the problem is to secure a more rapid

pace of growth of the agricultural production, and radically to overcome the low productivity of the small individual farming unit. In other words, the problem of decisive socialist reconstruction of agriculture has to be squarely faced. In the face of these problems the alliance between workers and peasants, the link between city and country, must acquire new forms, based upon functions of production.

The underrating of this new link between city and country, on the basis of production, or of the urgent necessity for an enhanced socialist reconstruction of agricultural production and social relationships in the village, is one of the principal errors of the opportunist Right-Wing trend in the Communist Party (Bukharin's group). The struggle against this is a most important prerequisite for the successful attainment of the objects of socialist reconstruction in the U.S.S.R. Discussions of the Five-Year Plan, as well as of the entire political experience of the last few years, have demonstrated that the Right-Wingers in the Communist Party, headed by Bukharin, have abandoned the revolutionary positions of Leninism in this matter and lost the correct revolutionary perspective.

We should like to stress with particular force the fact that, contrary to the widespread petty-bourgeois notion, the rapid pace of socialist industrialization of the Soviet Union and the great expansion of state industry, is not only not contradictory to the interests of the worker-peasant bloc at the present stage of Soviet economic development, but, on the contrary, is the most important and decisive condition for its strengthening. The bourgeois critics of the Soviet economic policy maintain that the main cause of the slow growth of agriculture is the excessively fast rate of industrialization, which according to them overtakes the present economic strength of the country. The truth, however, is that Soviet agriculture is literally stifled by the lack of agricultural machinery and mineral fertilizers, and by the lagging growth of industrial farming equipment. The clew to that criticism is this: the bourgeois economists would like to have an agricultural advance of a definite type, namely, one that

would open broader economic prospects for the more prosperous groups in the village—its capitalist top—who would receive their technical equipment from the capitalist industries of foreign countries, paying for it by greatly expanded exports of agricultural products. If the capitalist top of the village and its learned spokesmen raise objection to the high rate of industrialization, it is because an advanced socialist industry provides a technical basis for the socialized sector in agriculture and thereby destroys every prospect of growth for the capitalist elements in the village. As for the middle and small peasants, who now, in ever growing numbers, are passing to socialized agricultural production, thus radically breaking up the age-long forms of country life, they decidedly support the high rate of socialist industrialization which is now being enforced. The extension of acreage under cultivation in the private sector of agriculture, which is going on, in spite of the expectations of our enemies and the gloomy predictions of the Right-Wing opportunists in the Communist Party, is the best evidence of that.

We have already indicated that there is absolutely no justification for opposing the interests of the socialized sector in agriculture and those of the individual holdings of the poor and middle peasantry. Of course, it can be readily understood why the ignorant correspondent of the *Rigaer Rundschau* sees in the Five-Year Plan a "fight upon the peasantry" and defines its purpose as that of depriving the peasants of "the fruits of their revolution and of restoring big latifundiae under Communist administration." This correspondent is apparently under the spell of the technical revolution in American agriculture. Here the great mechanized capitalist farm enterprises, whose production costs are about half those of average farms lead to a mass liquidation of farmer's holdings, involving wholesale failures by farmers and the acquisition of their land by the banks, at bargain prices.

The farmers of America face a catastrophe within the immediate future, one that will possibly equal that which befell the peasants of England at the dawn of capitalism, when the land-

lords wanted their lands for the development of sheep raising on a large scale.

The prospects for the growth of the socialist sector in Soviet agriculture open to the village and the masses of peasants, are altogether different. The state farms, the machine and tractor stations, and the collective farms, are only the vanguard on the glorious road to the technical and socialist reconstruction of the great bulk of small and middle peasant farms in the Soviet Union. In the U.S.S.R., and there only, will the transition toward large-scale mechanized agriculture, which is everywhere dictated by modern technical progress, be effected not as a result of wholesale ruin of the peasantry, but of an accord between the interests of the poor and middle peasants and the objectives of socialist development; and it will bring about an unparalleled advance, in the economic and cultural standards of the 130 million people who now constitute the national economy of the Soviet Union. It is, therefore, a glaring absurdity to maintain that the development of the socialized agricultural sector is an attempt to draw a line against the peasantry, violating the union of the proletariat with the poor and middle groups. Far from weakening the worker-peasant bloc, the development of the socialized sector in agriculture marks the beginning of its transition to a new and incomparably higher level. The class division between the proletariat and the peasantry begin now to be effaced; and the great process of overcoming the historical opposition between city and country is definitely inaugurated.

That the building of the socialized sector in agriculture does not imply a decreasing concern over the interests of individual peasant holdings is shown by the system of economic stimulation of increased peasant production which is a characteristic both of the economic reconstruction now under way in the Soviet Union and of the Soviet Five-Year Plan. We have described the policy in regard to industrial and agricultural prices, that in regard to the agricultural tax, the development of the government system of contracting in all branches of agriculture, the growth of agricultural co-operative organizations, etc. This whole

system of economic stimulation is, of course, marked by one feature that is unwelcome to the advocates of capitalist evolution in the village. It consistently endeavors to limit the economic prospects of the capitalist top of the peasant population. This, however, is not a defect; it is a conscious object and the source of the whole economic system's greatest potential strength.

The high rate of socialist industrialization, the large development of the socialized sector in agriculture, the strengthening of the factors of public organization and government regulation in agricultural production, in a word, the energetic advance of socialist elements in agriculture and in the Soviet village by its very logic implies an offensive against the remnants of capitalism and so summons their furious and desperate resistance. The policy of undermining the economic positions of the capitalist top of the village and of extirpating capitalism in the village, the sustained effort for the liberation of the masses of the peasantry from the ideological influence of the upper group and the gigantic exertion to train the millions of peasant toilers in socialist ways, all this is an integral and inseparable part of the general aspect of that phase in the evolution of the worker-peasant bloc which corresponds to the conditions and requirements of the reconstruction period.

Here appears, in all its magnitude and full momentousness, a new and a truly historical mission of the proletariat. It led the peasantry in the struggle against tsarism and the feudal-bourgeois order in pre-revolutionary Russia. In alliance with the poor peasants, it accomplished the expropriation of the capitalist top of the village and it exerted endless efforts in order, first, to secure the neutrality of the middle peasant groups in that struggle, and then to enlist their support and lead them on the road of socialist reconstruction. Now the proletariat is confronted with the task of supplying in ever-increasing numbers the personnel of organizers and leaders in the process of technical revolution and socialist reorganization of the village, the full program which is embodied in the Five-Year Plan. It will not be out of place to recall here the ardent appeal which concluded

Molotov's report at the XV Congress of the Communist Party of the Soviet Union :

We are now entering a period when we actually begin to feel with our hands the road that leads to abolition of the opposition between city and country. This opposition remains to this day the worst evil in our country, but now we know by what methods it can and will be reduced. We must help strengthen the means; we ourselves must make a decisive start on that road; we must take the leadership in this cause; and then we will succeed in gradually doing away with the opposition between city and country. The economic basis of this process is the growth of large-scale farming. This is the task we have set ourselves now. We are ready to tackle, and we shall accomplish this task, the most important and fundamental that we face in the village. To successfully perform it is the only genuine way of laying the foundations for Communism. It affords the basis for the transition to a communist society free of class divisions. These great objectives demand of the organized working class that it shall proceed with the utmost perseverance to help along the toiling masses in the village, who have been lagging behind. Once the proletariat has realized its new aims and duties, it will succeed in having the union of workers and peasants accomplish its main object: that there shall be no workers and no peasants, no classes whatsoever in our country, but that we shall all become members of one socialist society.

The idea of the leadership of the socialist city in regard to the village in the process of reconstruction; the idea of extensive aid given by the proletariat to the millions of peasants in the reconstruction of their economic and cultural life is the outstanding feature of the Five-Year Plan and of the process of economic reconstruction as it develops in actual practice. The expeditions of "labor brigades" into the villages to help the peasants in their efforts toward collectivization, which have developed on such a large scale this year, are among the many manifestations of the growth of active leadership of the proletariat in the socialist reorganization of the village.

CHAPTER VIII

THE PERSPECTIVE OF TRANSPORTATION

THE Soviet Union embraces one-sixth of the earth's surface. It extends from the Arctic Circle to sub-tropical Turkey, Persia, Afghanistan and China, and from the shores of the Japanese Sea to Poland and Rumania. To cross it from west to east it is necessary to travel about 11,000 kilometers; from north to south about 4,500 kilometers. From Moscow it is 800 kilometers to the western frontier; 10,000 kilometers to Vladivostok; 3,000 to Tiflis, capital of Trans-caucasia and another 3,000 to Tashkent, the Central Asiatic capital; 1,130 to the northern ports of Archangel and 2,000 to Murmansk. The principal centers of production are distant from the sources of supply and materials must be carried tremendous distances under the most difficult conditions.

Coal from the Donetz and Kuznetz Basins is hauled to the great majority of the country's industrial districts. All supplies of timber and lumber come from the distant northern and eastern border-lands. The smelting centers are quite removed from the metal mining sections. Petroleum and cotton come from the southern and southeastern border-lands. There are also the great tasks of uplifting the backward economic districts and former semi-colonies of tsarist Russia which greatly increase the necessity for long hauls and put an added burden upon the freight traffic in general. And the intensive social life of the Soviet democracy together with the rapid cultural development of the great masses of the people have the effect of increasing the passenger traffic.

All of this illustrates the extreme importance of the transportation problems in the Soviet Union, and what great tasks confront the country. It must be remembered that pre-revolutionary

Russia was one of the most backward countries of the world in developing its railways and general transportation facilities, while the Soviet Government added, during the period of rehabilitation 18,300 kilometers to the railway system of the country, increasing their length by approximately 30 per cent. However, the present condition of the railroads, as of the transportation system generally, makes it still quite impossible to meet the immense and growing needs of the rapidly developing national economy. According to the most conservative computations, clearly underestimated, freight traffic in the U.S.S.R. will increase from 150 million tons in 1927-1928 to 280 million tons in 1932-1933. In other words, during this five-year period railroad traffic will more than double that of 1913, and increase by 86 per cent within the first year of the period. That the computations of the Five-Year Plan underestimate the real development is shown by the fact that already according to the control figures for 1929-30 the railroad traffic will reach a total of 215 million tons, whereas the Five-Year Plan contemplated only 183 million tons for that year. Even for the following year the Plan provides for only 210 million tons of railroad traffic.* Freight traffic over internal waterways during the five-year period will increase by approximately 60 per cent, while sea-borne tonnage will grow about 40 per cent.

It should be emphasized that these figures give no correct idea of the total freight traffic of the country over the highways which play an extremely important part in the transportation system. The freight traffic on these roads will reach at least 1.2 million tons in 1929-1930.

But neither the 76,000 kilometers of railroad, the navigated internal waterways, nor the insignificant number of hard surfaced roads are extensive enough or sufficiently well kept to perform the tasks imposed on them by socialist industrialization

* According to the latest available data, the actual railway freight traffic in 1929-1930 will reach 236 million tons, substantially exceeding even the revised estimate of the control figures, while the control figures for 1930-1931 provide for 325 million tons as against the originally planned 280 million tons for 1932-1933, the *last* year of this period.—*Ed.*

and the economic development of the country. It is for this reason that the problem of transportation takes so prominent a place in the Five-Year Plan and has so captured the attention of the Soviet State and public opinion. It is hardly necessary to say that the several transportation facilities are considered as parts of a single state transportation system; and that instead of being mutually competitive, they carry out an organized and fully co-operative system of distribution. Still, it must not be overlooked that it will be possible to solve only the most urgent transportation problems during this period. Development on a scale large enough to correspond with the vastness of Soviet territory and the processes of Soviet economic reconstruction must fall to the lot of the next five years, at which time heavy industry will have developed sufficiently to engage in this huge task.

With this general background in mind we may pass to a review of the more important concrete problems of transportation, and of the transportation policies of the U.S.S.R. during the present five-year period.

1. BUILDING THE RAILROAD SYSTEM

The difficult conditions under which the U.S.S.R. is beginning to rearrange the economic geography of tsarist Russia are characterized by great shiftings in the development of the productive forces of the country on the basis of the organized planning of the entire national economy. In the general task of socialist development, this rearrangement must be brought into harmony with the national economic as well as the strategic policy of the country and the fact that the U.S.S.R. exists in a hostile capitalist world. This situation makes for the unequal development of transportation lines and routes. Two major routes of the Soviet Union show an especially high tempo in the development of freight traffic. Therefore, increasing attention is given to them throughout the present period.

These basic routes are: first, the meridional, in the European

part of the Soviet Union, following the Donetsk Basin-Moscow-Leningrad line, and providing transportation facilities for Donetsk Basin coal moving toward the north, as well as for the lively traffic between the Ukraine, Northern Caucasus and Trans-Caucasia on the one hand, and the central industrial region on the other. The second route is latitudinal and provides a connecting link between the vast economic resources of Siberia and the European centers of the Soviet Union. In addition to these two outstanding transportation routes, there are a number of others on which the tension is not quite so great but which are developing rapidly, and gaining greatly in importance in the national economy of the country. To this group belong the Donetsk Basin-Krivoy Rog route, which provides transportation facilities for the southern mining, industrial and metallurgical district; and the routes connecting Trans-Caucasia and Northern Caucasus with the industrial centers, Central Asia with Siberia and industrial centers of the European part of the Soviet Union as well as several others.

On the other hand, a number of important branches of agriculture and industry are hindered in their development by a lack of transportation facilities and an inability to develop large-scale production, since they have no way of getting their produce to the centers of distribution. This is chiefly true of the lumber industry, but also of agriculture, and especially of grain production in much of the black soil region. The same condition interferes with the development of industry, especially in some of the eastern districts of the country. It is not surprising, therefore, to find that while some of the existing transportation routes and railroad lines are working somewhat below capacity, which is especially the case in the western part of the Soviet Union, where the tsarist government made every effort to develop the railroad system during the period preparatory to the World War, there are other economic regions that are literally breaking down as a result of the lack of transportation facilities and urgently demand large-scale transportation construction.

The program of development in this field which is now being

carried out is based on consideration of all these facts, and looks toward the general lines of economic development in the Soviet Union after the present five-year period. Let us consider first the reconstruction of the existing Soviet railways.

Of the approximately 5 billion rubles which will be invested in major construction projects in the field of railroad transportation during the present five years (exclusive of major repairs, which will be covered out of the operating budgets), about 3.3 billion rubles will be devoted to the reconstruction of the existing railway lines and their equipment. In other words, capital outlay for the reconstruction of existing railways is the major item in the total sum of capital investments in railways. However important the construction of the new railroads may be, the significance of the reconstruction of the existing railroad system must never be underestimated. The importance of this is the greater because it means not merely adapting the railroads to the ever growing demands of the Soviet economic life, but also the liquidation and correction of the intentional damage caused by the band of counter-revolutionists exposed last year. These included some prominent railroad men from the ranks of the former owners of the private railroads and some high officials of the railroad administration of tsarist Russia. There can be no doubt that, notwithstanding the activities of counter-revolutionary organizations, the reconstruction of the Soviet railway system will be carried out according to the lines already laid down, and that it will bring the railroads to that high level of technique which characterizes the most advanced railway systems.

The most important elements of the program of railroad construction now being carried out may be presented in the following way. It is necessary first of all to complete the elimination of low powered freight locomotives and low tonnage railroad cars. They must be replaced with powerful locomotives of the E type (80 tons) and the number of high tonnage freight cars must be considerably increased. About 3,000 of these new high power locomotives will be put into operation on the Soviet rail-

roads during the present five-year period and about 160,000 new railroad cars (in two-axle units) will be added to the car reserves of the country, so that the share of high tonnage capacity railroad cars (60 tons) in the total car reserves of the country will be increased from 5 per cent at the beginning of the five-year period to 25 per cent at its end.* This requires the construction of 60,000 of these cars. The program of the Soviet car building plants provides accordingly.

Another important aspect of the general program of the Soviet reconstruction of the railway transportation system is the introduction of automatic coupling on all freight trains. This will necessitate production of couplings in the Soviet Union, their testing on a number of closed cars, the preparation of railroad car-yards, etc. Finally, it will be necessary during this period to complete that part of the program which is concerned with the introduction of automatic braking systems on freight trains, since no modern railroad can operate without them.

In view of the great popularity of electrification in the Soviet Union, and in connection with the great possibilities presented by the utilization of cheap electric energy there is, at present, much discussion of the question of railroad electrification. It should, however, be emphasized that conservative railroad men as well as actual saboteurs have greatly interfered with the solution of this problem. The Five-Year Plan contemplates a considerable step in this direction which is considered an important part of the general reconstruction program. The Plan provides for electrifying the Moscow suburban railroads; the section of the Trans-Caucasian Railroad at the Suram mountain pass (these roads carry petroleum from Baku to Batum); the line to the mineral spring health resorts; the system connecting the Donetz Basin with the city of Kharkov (Liman-Kharkov), with its exceptionally heavy coal traffic; and the Kislov side line in the northern Ural, which is of great importance for developing the mining and chemical industries here.

* There are indications that these estimates will be surpassed. 1,000 locomotives and 90,000 railway cars have been ordered for 1930-1931.—*Ed.*

This railway electrification, partly in mountain sections and partly on the plains, is considered a first experiment which will serve as the basis for the extensive application of electric power to the transportation system of the Soviet Union. One of the greater projects which is scheduled for early consideration and, in all probability, for early realization, is the plan for the electrification of the Kursk Railroad which is the major line connecting the Donetz coal basin and the Ukrainian agricultural regions with the industrial centers of the Soviet Union. However, this great project will hardly be started before the end of the present five-year period.

Reference has already been made to the fact that two routes (the meridional, following the Donetz Basin-Moscow-Leningrad route and the latitudinal, connecting the European centers of the Soviet Union with Siberia) show the most rapid and even tempestuous freight traffic development. They already show signs of strain. Both are subject to the attention of the country's railroad administration. With regard to them the problem of concentrating the freight traffic and radically reducing transportation costs on bulky freight is becoming a practical, even acute problem, demanding immediate attention. The construction of super-trunk lines on these two routes constitutes the central problem of the Soviet transportation policy in the immediate future. The work for the partial or complete solution of this problem belongs to the major tasks of the general program of new construction and the reconstruction of the existing system of railroad transportation. However, this problem will permit of only partial solution during the present five-year period and not even that in the same degree for both routes.

The freight traffic between the Donetz Basin and Moscow and Leningrad can be taken care of by means of the existing transportation resources provided that about 100 million rubles are spent on the extension, of junctions, the construction of a second track on some of the lines, etc. It would, however, require several hundred millions of rubles to convert these into super-trunk lines. This latter development also awaits a decision between

alternative courses,—the electrification of the Kursk Railroad or the construction of a new super-trunk line over the Donetsk-Basin-Voronezh-Moscow route. The Five-Year Plan accordingly provides funds only for expansion of the existing facilities to take care of the freight traffic on this route. The Plan also appropriates the approximately 60 million rubles for the necessary investigation and completion of the project for converting these into super-trunk lines. The realization of this project will not take place within this five-year period.

The situation is somewhat different with regard to the Siberian route. The freight traffic between Siberia and the European centers of the Soviet Union will, by the end of the present five-year period, undoubtedly exceed the existing transportation facilities. In addition, a careful investigation of the question leads to the conclusion that the conversion of the Siberian route into a super-trunk line is of exceptionally great importance in the economic life of the country. The Five-Year Plan therefore includes a series of projects which constitute consecutive steps toward the accomplishment of this task. During the first three years of the present period the construction of the new Kurgan-Sverdlovsk line will be completed and more easy grading will be effected on the Kurgan-Novosibirsk section of the Siberian trunk line. Linked up with these projects is the construction of a second track on the Kazan Railroad from Sverdlovsk to Shemardan and of a new line from Shemardan to Nizhni-Novgorod, with a double track bridge over the Volga. The total capital outlay for this project is to reach over 200 million rubles.

This sums up the more important phases of the reconstruction of the railroad system of the Soviet Union. However modest it may at first appear from the point of view of the advanced capitalist countries, which have at their disposal a very rich and highly organized railroad system, it is nevertheless an important step in the advance of the Soviet railway system. The realization of this program will substantially reduce operating expenses and lower hauling costs by 20 to 30 per cent. Moreover, a more complete study of its possibilities than has previously

been made reveals that general railway efficiency will be increased and transportation costs lowered more than proportionately to the effort involved. In this work the U.S.S.R. has adopted the policy of enlisting the extensive aid of foreign technical experts.

2. NEW RAILROAD CONSTRUCTION

We have already noticed the insufficient transportation facilities of the vast territory of the Soviet Union. The 58,500 kilometers of railroad lines which existed in the present territory of the Soviet Union on the eve of the revolution could not possibly meet the transportation needs of the country, nor, of course, provide for its further economic development. As we have said, tsarist Russia was one of the most backward countries of the world with regard to railroad transportation.

This situation could not possibly have been substantially improved during the first years of Soviet economic reconstruction, when the country was confronted mainly with the problems of reorganizing existing facilities. Its major effort was then directed toward the reconstruction of the basic divisions of the national economy and accelerating the difficult tasks of the initial stages of the construction period. During this period the heavy industry of the country was still too weak to shoulder the immense burden of extensive railroad construction. Notwithstanding these difficulties, the length of Soviet railway lines had increased at the beginning of the period of construction in 1927-1928, by 18,500 kilometers—more than 30 per cent above tsarist Russian (in the same territory). It is quite clear that every year of increased socialist industrialization of the country, bringing always fresh backward economic regions into the advanced sphere, and of new cultural development, increases the transportation problem, now one of the chief problems of Soviet economic policy. The Five-Year Plan makes provision for carrying its solution to the greatest possible extent within the limits of the present period.

In accordance with the Five-Year Plan as it is now being carried out, about 22,000 kilometers of new railroad lines will be constructed in the U.S.S.R. during this period. In other words, the total railroad mileage will reach about 100,000 kilometers. Soviet public opinion does not overestimate the rate of progress indicated by such construction. On the contrary, this program is considered as embodying that minimum of railroad construction which will merely enable the country to maintain or at best slightly improve the present level of railway service. Further plans now being evolved may as much as double it. Only the decisive strengthening of heavy industry, which will take place during the present five years, will enable the country to undertake a much greater program of railroad construction during the next five-year period.

Still, we must underestimate neither the difficulties involved, nor the tremendous rate of progress implied by the extension of the railroad system of the Soviet Union by practically 25 per cent according to the Plan, and by nearly 50 per cent in the new revised figures.

During 1927-1928, 3,600 kilometers of new railroad lines were under construction. During 1929-1930 new railroad lines under construction in accordance with the Five-Year Plan reached 11,100 kilometers. During the entire five-year period construction will be started on 22,600 kilometers of new railroad lines of which 17,000 kilometers will actually be put into operation during this period. Of these 48 per cent will consist of trunk lines connecting different regions of the country, and 52 per cent will be local lines. "Local" lines in the Soviet Union, however, must serve individual economic regions which frequently cover greater areas than the average European country. Some of them are, therefore, of quite impressive length.

To illustrate the nature and extent of the several railroad lines which are at present under construction in the Soviet Union some of the more important ones will be reviewed below.

The first place belongs to the just completed Turkestan-Siberia Trunk Line which connects the southern district of Siberia with

Turkestan, the center of Soviet cotton cultivation. It is generally known that the difficulty in supplying Turkestan with grain has been the major obstacle against the rapid growth of the area under cotton cultivation in Turkestan. The problem of connecting the vast Siberian grain and forest resources with the richest center of cotton cultivation, by means of a great trunk line, which would in addition cross on its way such a rich and virgin territory as Semirechye, has been the concern of the country's economic thought for many years and has enlisted the widest public interest.

The construction of the Turkestan-Siberian Railroad was started in 1927-1928. Over 1,500 kilometers passing through a mountainous and desert section were constructed at an accelerated rate, the construction work being carried on simultaneously from the north and south. In 1930, the southern and northern sections will meet: the line will be completed, and this railway, more than 1,500 kilometers in length and costing over 200 million rubles opened for traffic over its entire length.* It is impossible to overestimate the great economic and political significance of this project. All of Central Asia, a region rich in sub-tropical crops, depended; until now, on one railroad line (the Moscow-Samara-Orenburg-Tashkent) and on the roundabout route through Baku by means of the Caspian Sea to Krasnovodsk for communication with the industrial centers of the country. With the opening of the Turkestan-Siberian Railroad Central Asia was linked to Southern Siberia and the great Trans-Siberian Trunk Line. The speed with which the line was constructed, and the soundness of its construction, must be considered as great achievements for the Soviet transportation engineers.

The place of next importance is taken by the interregional Saratov-Milerevo line, 575 kilometers long. This road, together with other smaller lines (Troitsk-Orsk-Orenburg-Uralsk), will form a great interregional trunk line connecting the southern

* The road was completed and opened for traffic over its entire length in May, 1930 amid a great popular celebration in which Soviet officials and the native population participated.—*Ed.*

Urals and the territory on the Volga with the ports of the Azov Sea. With the Volga-Don canal this trunk line will fully solve the transportation problem of the southeastern regions of the U.S.S.R. It must be remembered that the region east of the Volga and the southern part of the Urals or the Bashkir autonomous Soviet Republic, which at present constitute the richest section of extensive agriculture, are starting a decisive reconstruction of their methods of agricultural production. The accelerated formation of large grain producing and mechanized collective farms is now starting in this region. To a certain degree the grain produced in this Volga-Ural section, no less than that of the Ukraine and the North Caucasian steppes will serve as a basis by which the U.S.S.R. will regain its position as an important grain exporter. In any case the Volga and the Bashkir steppes will have to undertake the great task of supplying the country with grain when that of the Ukraine and North Caucasus is directed for export. From this point of view the net of agricultural railroad lines composing the Troitsk-Orsk-Orenburg-Uralsk system, and particularly the Saratov-Milerovo road and the Volga-Don canal, will be of the greatest importance in the economic life of the country. The capital outlay required for the Saratov-Milerovo line will be about 100 million rubles. It will be completed by the end of the present five-year period.

To the interregional railroads which will be built in the U.S.S.R. during the present period also belongs the group which serves the lumber industry, supplying lumber products to the manufacturing centers and exporting lumber to foreign countries. In the first place comes the trunk line which will connect the central industrial region with the richest lumber region on the Pechora River and the northern part of the country generally, and having a total length of 767 kilometers. The portion which will be constructed during these five years will absorb a total capital outlay of 76 million rubles. In the second place comes the Soroka-Kotlas Trunk Line, which will supply an outlet for the Pechora lumber to the Murmansk Railroad and to the port at Murmansk. This railroad will have a total length of 500

miles. The part of it which will be built during the present five-year period will cost 80 million rubles.

As a result of the impetuous course of industrialization, the domestic consumption of lumber used for construction purposes is growing at a very rapid rate. In addition, the export of timber and lumber is scheduled to quadruple during the present period. The construction of the group of railroads serving the lumber industries (the Uost-Sisolsk-Kotlas, Veliky-Uostug, Vologda-Vyatka, and Soroka-Kotlas Railroads) which have an aggregate length of about 1,500 kilometers is therefore vital.

Another interregional railroad line which should be considered in conjunction with this group of railroads, and which will be completed during this period, is the Black Sea Railroad to pass along the most picturesque part of the Black Sea coast. Starting at Tuapse it goes through Sochi, Gagvi, Sukhum, and before reaching Batum turns to connect with the great Trans-Caucasion Trunk Line which goes from Batum through Tiflis, Baku, Makhachkala and Rostov to the center of the Soviet Union. This Black Sea Railroad, 360 kilometers long, will involve an expenditure of 67 million rubles. It presents the great advantage of shortening the distance between Trans-Caucasia and the industrial centers of the Soviet Union by 1,000 kilometers as compared with the existing railroad lines. In addition to its economic significance, the Black Sea Railroad is of immense cultural importance. Since it passes through the most beautiful scenery and the best seaside resorts of the country, it is destined to become very popular among Soviet and foreign tourists.

Finally, this group of railroads includes the great trunk line which will traverse the west part of the Ural region in a meridional line following the Perm-Ufa-Orenburg route and will then link with the trunk line connecting Moscow with the city of Tashkent, capital of Central Asia. This Western-Ural Trunk Line is of immense significance to the agriculture and industry of this region. It not only links the agricultural sections of the Ural with its industrial districts but also provides an outlet for its rich timber resources, mineral fertilizers, metals

and grain to the Volga regions and to the regions of Central Asia. This line covers a single administrative and economic region. Nevertheless, its length and economic significance put it in one class with the interregional railroads. Its total length will be 940 kilometers, and will cost 130 million rubles.

The above enumeration does not nearly cover all the new railroad lines of interregional significance which are at present under construction in the Soviet Union and which must be completed or on which construction is to start during the present five-year period. There are a number of other new railroad lines not quite so long as these but still of great economic and cultural significance. Enough has already been said, however, to give some idea of the nature and state of the interregional railroad construction during the present period. Naturally, in considering this construction we must not lose sight of the super-trunk line to be built in Siberia and, of the outlets from the Donetz Basin to the industrial centers of the country which were discussed in the section devoted to the reconstruction of the existing railroad transportation facilities.

Passing to the regional railroad lines which are to be constructed during the present five years, and which constitute 52 per cent of the total new railroad construction, it should be noted that they are of the greatest importance in the economic development of the several parts of the U.S.S.R. A few of these projects will be mentioned in order to give some idea of the scale and significance of this class of railroads.

Because of the size of the Soviet Union, railroads which cover hundreds of miles and cost tens of millions of rubles are frequently considered as local or regional. Here are a few examples. The Tomsk-Yeniseyisk line in Siberia will extend 537 kilometers and will cost 50 million rubles. It will serve the abundant timber resources of the Yeniseyisk region, connecting it with the highways of trade and industry. The same is true with the new railroad lines of Kazakstan; the Borovoye-Akmolinsk line, 230 kilometers long, is to cost 20 million rubles; the Orsk-Aktubinsk line, 200 kilometers long, 30 million; and the Kustanay-Akmo-

linsk line, 650 kilometers long, 52 million rubles. These roads traverse very rich agricultural sections, and it will be their rôle to provide for their development and their connection with the general economic resources of the country.

Another group of local railroad lines having a total length of 700 kilometers and built at an aggregate cost of 60 million rubles is to be constructed in the same Kazakstan region for the purpose of accelerating development of the non-ferrous metals industry of the U.S.S.R. The pioneer railroad lines which will be built in the cotton-producing districts of Central Asia are the Shardyui-Khiva, 400 kilometers long and involving the sum of 30 million rubles; the Termez-Dyushambe, 226 kilometers long and costing 18 million rubles. They gain their importance from their connection with the program for development of cotton cultivation, by which it is aimed to insure the production of sufficient cotton by the end of the five-year period to relieve the Soviet Union of the necessity of importing American cotton. The above illustrates the scale and nature of local railroads. We may see from their length and cost that they are quite substantial developments which will no doubt play an important part in the development of the constructive productive forces of the country.

It would be possible greatly to extend the list of such local railroads, but this is hardly necessary. It is enough to say that in 1929-1930 railroad construction took place simultaneously on 60 different lines, exclusive of small side lines and special lines serving industrial plants.

From the point of view of their economic significance the lines now under construction may be divided into several major groups, but it must be kept in mind that all such divisions are more or less arbitrary and that each railroad in the final analysis serves the most variegated economic and cultural interests.

The lines under construction serving primarily the interests of agriculture will have the greatest aggregate length. This group, according to the original Plan, traverses 7,800 kilometers. The second place is taken by the lines which will serve the inter-

ests of the timber and lumber regions and supply the domestic and foreign markets with timber and lumber. This group has a total length of about 3,000 kilometers. The lines which will primarily serve the interest of manufacturing industry have a total length of about 2,000 kilometers. Finally there are 3,000 kilometers under construction which have such functions as the abolition of roundabout routes and the relief of heavy traffic on crowded sections of the existing railroads.

The arbitrariness of such classifications is quite plain. To which would belong the Turkestan-Siberian Trunk Line, or that passing over the meridional route through the western Ural regions? Both of these lines will serve, at the same time, agriculture and industry. They will carry lumber and grain and the products of manufacture, on a scale and in proportions which cannot be forecast at this moment. But however arbitrary these subdivisions may be, they still serve to illustrate the special transportation problems which are to be met by one or another group of railroads, and the individual sectors of the economic front where the want of transportation facilities is now especially urgent, but which will be covered by the new lines.

It may be considered an established fact that the new railroad construction, both of interregional and local lines, embraces the vast territory of the Soviet Union and is subordinated not merely to the immediate economic tasks but also to the more general cultural and economic development of the backward regions of the country. The broken red lines which indicate new railroad construction on the map of the Five-Year Plan, show, though perhaps not completely enough, the most important economic routes, and embrace practically all the economic regions of the country. Let us note in passing that this map is at present very popular in the Soviet Union.

The aggregate cost of the new railroad construction during the present period will amount to about 1.6 billion rubles.

The accomplishments in 1928-1929, the first year of the period, and the operating plan for 1929-1930 show that the realization of the program of new railroad construction is proceeding in a

general way on the scale contemplated in the Five-Year Plan. During 1929-1930, 2.7 billion rubles will be invested in new railroad construction as against 1.3 billion invested during the preceding year. Sixty new railroad lines are already under construction. On 60 different construction projects scattered over the entire territory of the Soviet Union, then, the five-year program of new railroad construction is at present being rapidly carried to completion.

To be sure, in the drafting of the Plan there were a number of times when industry and transportation crossed swords, fighting for a greater share of budgetary appropriations or for a greater share in that part of the national income devoted to new construction. However, with the continuation and development of a planned system of economy, and the extension and widening of construction, there is a decreasing place for such quarrels. The limit for new railroad construction is set, not by the lack of financial resources, but by the level of the heavy industry of the Soviet Union. And just as there are ever more voices from the agricultural interests heard demanding not limitation but acceleration of the rate of industrial development, so it is more and more to the interest of transportation that the tempo of the development of Soviet heavy industry shall be continually heightened. Transportation construction on a scale corresponding to the vastness of the Soviet territory and the great tasks of socialist development, will gain headway in the not distant future, when it will be able to lean on the powerful shoulders of Soviet heavy industry, growing at an accelerated rate.

3. WATERWAYS

If the Soviet Union has exceeded the pre-war level at the very beginning of the construction period, so far as railroad freight traffic and the length of railroad lines are concerned, the situation is different with regard to the waterways. Both in the development of river-borne and sea-borne trade, rehabilitation was retarded and naturally new construction has not yet really been

started. The Five-Year Plan accordingly cannot pass over this section of the economic front without devoting a great deal of attention to it. It is impossible here not to consider a number of serious problems.

We may start with sea transportation. There was a time at the end of the eighteenth century when 94 per cent of the total foreign trade of old Russia was sea-borne and only 6 per cent was carried over land transportation lines. At that time the major part in the sea trade of the country was by the Baltic Sea. During the nineteenth century the situation changed completely. By 1912 the development of the railways and a number of trade agreements made between Russia and various continental European countries reduced the portion of the sea ports in foreign trade to about 7 per cent of the total exports and 48 per cent of the total imports. The Baltic Sea was beginning to lose its importance to ports on the Black Sea. The Imperialist War and then the imperialist blockade of the Soviet Union during the civil war period greatly damaged the physical and technical condition of the Soviet seaports. The relatively insignificant volume of the foreign trade during the last period presented no opportunity for adequate rehabilitation and reconstruction of the port facilities on the Soviet Seas. It should be remembered that at the beginning of the reconstruction period the cargo tonnage handled in the seaports of the U.S.S.R. was no more than about 50 per cent of that handled in 1913, the situation in the individual ports being as follows: Vladivostok exceeded the pre-war level; Novorosiysk and Batum reached about 80 per cent of the pre-war level; Archangel and Poti, about 50 per cent; Mariupol, Nikolayev, Leningrad and Odessa only about 30 per cent. The last White Guard remnants of tsarism destroyed or carried away with them a substantial part of the merchant marine. As a result, the part of foreign boats in the sea-borne trade of the Soviet Union has substantially increased since pre-war times. This has the effect that many tens of millions of rubles of Soviet currency have to be paid to foreign boats for freight charges.

The Five-Year Plan is based on the expectation that by 1932-1933 the total cargo tonnage passing through Soviet seaports will exceed 50 million tons, exceeding by almost 20 per cent the cargo tonnage in 1913. This rapid growth of the sea-borne trade will come as a result of the development of lumber export through the ports of Archangel, Murmansk, Leningrad, Vladivostok and, in the case of high grade lumber and the rapid development of petroleum, exporting through Batum and Tuapse. The expected renewal of grain export through Rostov, Kherson and several other southern ports of the U.S.S.R. is also a factor in the reconstruction of waterway traffic. Other contributory factors in the same direction will be the increased export of bituminous and anthracite coal from the Donetz Basin, primarily through the port of Mariupol; the growth of the export of ore and manganese through the ports of Mariupol and Poti and the extension of the export of animal products, butter, eggs, etc. Finally, domestic demands created by the economic development will also have the effect of increasing the total traffic of the ports. To this category belongs the transportation of coal from the Tkvarcheli region over the Black Sea to the Kerch metallurgical plants, etc.

This growth of cargo tonnage through the seaports demands substantial capital investment, to supply them with the necessary facilities and technical equipment. The total volume of capital investments in the seaports of the country will exceed 200 million rubles during the present five-year period. The nature of the construction work will depend upon the specific nature of the cargo to be handled by the respective ports. It is unnecessary to enter here into a detailed consideration of the various types of construction work to be done. It is enough to say that in addition to the construction of modern docks, ship repairing plants and loading and unloading equipment, it is also necessary to provide grain elevators and refrigerators, and special equipment for loading and unloading coal, petroleum, etc.

In connection with the development of sea-borne commerce and the seaports there is the question of the shipbuilding program.

Reference has already been made to the fact that the Soviet Government received an extremely small heritage of merchant marine, and that the percentage of the sea-borne commerce carried by Soviet ships was reduced below the pre-war level. The great inconvenience of the dependence on foreign ships and the inadvisability of spending tens of millions of rubles for this purpose accentuate the necessity for energetically developing the shipbuilding industry of the U.S.S.R. The Five-Year Plan provides for the development of a merchant marine on a scale calculated to double the tonnage capacity of the merchant marine and increase the proportion of the sea-borne commerce carried on Soviet ships by 11 per cent at the beginning of the five-year period and 20 per cent at its end.* To carry out this program it will be necessary to invest 350 million rubles in commercial shipbuilding, and strain to the utmost the resources of all Soviet shipbuilding plants. However, the existing shipbuilding plants of the Soviet Union are not only able to carry out the program, but according to all indications to increase it in the course of its execution. The increase of this program will also be partly accomplished by buying ships abroad.

To be sure, this substantial increase in the capacity of the Soviet merchant marine and its increased share in carrying sea-borne commerce imply a substantial improvement in its construction and operating methods. The program provides for sea-going ships of greater capacity than those owned by the country at the beginning of the present period, and for a number of improvements which will reduce the cost of sea transportation by not less than 20 per cent during the present five years.

Nor must we neglect the pioneer and extremely difficult, though fascinating tasks with which the Soviet Union is confronted on the Arctic Seas. No proof is needed of the enormous interest evinced by the entire world toward the scientific investigations in the Arctic regions. Neither is there any doubt as to the great part which the scientists and other representatives

* The revised program provides that the share of sea-borne traffic be increased to 23.4 per cent.—*Ed.*

of the Soviet Union are taking in these explorations—a part which is bound to be of increasing importance in the future. The splendid expedition of the Soviet icebreaker *Krassin* to save the members of the Nobile expedition to the North Pole, the rapid passage of the icebreaker *Sedov* in 1929 to Franz Josef Land, and the erection there of an observation station—the most northerly on the globe—the very interesting trips in connection with the so-called Karak expedition to the North Sea—all these are merely the first steps in the coming great economic and scientific developments on the Arctic Seas. Naturally, however, this imposes many new problems on the Soviet shipbuilding industry.

The rehabilitation of the river freight traffic had fallen substantially behind that of railroads. At the beginning of the reconstruction period it reached only 80 per cent of the pre-war level. The great rivers of the Soviet Union do not as yet play the full part which they should in the country's developed and organized economic and cultural life. The Five-Year Plan provides for increasing the freight traffic on the internal waterways from 38 million tons in 1927-1928 to 78 million tons in 1932-1933; that is, for the doubling of the freight traffic during the five-year period. At the end of the period it will exceed the 1913 level by 60 per cent. This will demand a substantial capital investment for the construction of river port facilities and for river shipbuilding.

Two major projects of fairly great proportions are concerned with the solution of waterway transportation problems on a large scale. The first of these projects is for the construction of locks on the falls of the Dnieper and the connection of the lower and upper parts of that river. The second project is concerned with the construction of the Volga-Don canal. Both deserve somewhat complete expositions.

Almost since the eighteenth century the progressive economic thinkers of tsarist Russia persistently and stubbornly raised the question of connecting the lower and upper Dnieper by means of a canal and locks around the Dnieper Falls so that a

direct great waterway might stretch from the Baltic to the Black Sea. It is well known that the construction of the great hydro-electric power station and the huge combine of industrial and transportation plants which are now being erected by the Soviet Government at the Dnieper Falls, and which together compose one of the greatest construction developments in the world, originated as an attempt to solve a transportation problem. For, indeed, there is nothing more absurd than the situation created by a range of granite rocks forming the river falls which for centuries have severed a splendid navigable river into two halves. The situation is even worse because the Dnieper traverses, to the north and the south of the falls, agricultural and industrial regions presenting the greatest opportunities for development.

Russian tsarism and Russian capitalism were unable, during the long period of their existence, to solve the problem of connecting the lower and upper Dnieper. The Soviet Government, however, upon the termination of the Civil War, and in the first years of its existence, undertook this huge construction and development work.

The Dnieprostroy construction now enjoys world-wide interest. Some of the most prominent European and American construction concerns are acting as consultants in its erection. Slightly less than a billion rubles will be invested during the present period in the construction of the Dnieprostroy hydro-electric plant and the industrial and transportation works combined with it. In 1933 this powerful hydro-electric station with an initial capacity of 480,000 horse-power (the total capacity is to reach 800,000 horse-power) will supply electric current to the mining region and to many new enterprises now under construction. Among these latter are an iron and steel mill with a capacity of from 650,000 to 1.1 million tons of pig iron a year, a plant for the production of ferrous alloys, aluminum plants, chemical works, a tractor plant with an annual capacity of 40,000 units, etc. This truly immense and impressive electro-chemical and metallurgical combine at times conceals from the public eye the transportation problem which is being solved in the process

of the Dnieprostroy construction, almost as an incident of it.

Yet, by the time that the hydro-electric station and industrial plants are completed, an excellent system of triple locks will connect the upper and lower Dnieper, and will convert the City of Zaporozhiye into a kind of Soviet Hamburg, for sea-going vessels will be able to reach the port of Zaporozhiye by way of the lower Dnieper. The traffic of lumber, animal products, grain and manufactures from White Russia and Northern Ukraine will find direct passage from the north to the south: cargoes of coal, crude oil, metals, etc., will flow along this great waterway from the south to the north. It is quite apparent that the time is not far off when, as a result of the reconstruction of the Berezina system of waterways, the Dnieper will be firmly linked to the Western Dvina and Berezina Rivers, and consequently with the northern seas. The legendary route "from the Varyag to the Greeks"* is converted into a reality in the course of the socialist industrialization of the Soviet Union. The time is near at hand when both shores of the Dnieper will be no less developed economically, culturally and industrially than the shores of the River Rhine. Smolensk, Kiev, Dniepropetrovsk, Zaporozhiye, Kherson are the mileposts marking the road of the development of this great waterway.

No less remarkable and realistic is the prospective development which will be carried on in the construction of the Volga-Don canal. While the idea of linking up the lower and upper Dnieper was born in the eighteenth century, the necessity of linking up the Volga with the Don River was appreciated as early as the sixteenth. During the nineteenth century no less than ten projects were prepared for the solution of this problem; but only the Soviet Government has actually undertaken their accomplishment.

The Volga River is the greatest in Europe. It traverses 3,700 kilometers; and, including all its tributaries, stretches to 80,000 kilometers, of which 40,000 kilometers can carry rafts, while 20,000 kilometers are navigable in both directions. But the

* From the Scandinavian peninsula to the Black Sea.—*Ed.*

Achilles' heel of the Volga lies in the fact that it empties itself into an internal sea which is no more than a huge lake which has no outlet to the ocean; that is, to the Caspian Sea. Nevertheless, this river serves as the main transportation channel for lumber from the north, chemicals and minerals from the Ural region over the Kama River, etc. On the other hand the Volga Basin, which is rich in natural resources and favorably located geographically, is deprived of sources of energy, since it has no deposits of mineral fuel. This disadvantage is accentuated in the measure that the forest reserves, especially those immediately on the Volga, are depleted and that crude oil ceases to be used as a fuel for the furnaces of the steam boilers, power plants, etc.

The questions of power development are becoming decisive factors in the destinies of the entire Volga region. The great industrial centers that were developed under the pressure of economic necessity in the Volga cities, such as at Nizhni-Novgorod (the immense Balkham paper works, the automobile works with a production of more than 100,000 cars a year); at Stalingrad (the tractor plant with an annual production of 50,000 tractors*), and at a number of other places, suffer from an acute shortage of cheap mineral fuel. Electrification along the entire length of the Volga is retarded by the lack of a power base. The construction of the Volga-Don canal is intended to solve this twofold problem. In the first place it will connect the great Volga waterway with the ports of the open seas—the Azov Sea, the Black Sea and the Mediterranean. In the second place, it will solve the important power problem by making the rich anthracite resources of the eastern part of the Donetz Basin available to the Volga region by means of cheap water transportation. The construction of the Volga-Don canal will be started in 1930-1931 and completed by the middle of the following five-year period.

The Volga and the Don Rivers pass near one another at Stalingrad. The technical problem of the canal construction consists

* The total annual output of tractors will reach 175,000 in 1932-1933.
—Ed.

in cutting a canal about 100 kilometers long in this place and of supplying it with water from the Don River by means of a special pumping station with a capacity of 15,000 horse-power, so that vessels with a displacement of 2.8 meters can pass through it. The carefully worked out project for the construction of this canal met with the unanimous approval of Soviet and Western European experts. It is estimated that this construction will involve a total capital outlay of about 175 million rubles.

The Volga-Don canal will supply an outlet for the growing commodity traffic from the northern part of the Volga region, the Urals, Siberia, Turkestan and Trans-Caucasia, by way of the Caspian Sea; and from the Ukraine to the open seas by means of the great Volga waterway. It is hardly necessary to emphasize the immense importance of this enterprise in the economic life of the country. The lower Volga region, Northern Caucasus, the Donetz Basin and the southern Ukraine suffer from a shortage of lumber. The Volga-Don canal will open the way for supplying these regions with cheap lumber from the forest reserves of the northern Volga and the Pechora region. High grade wheat from the fertile districts by the Volga will find a cheap water route to the ports of the open seas. The growing chemical industry of the Ural region and, above all, mineral fertilizers, will secure cheap transportation not merely to the grain districts on the other side of the Volga but also to the grain belt of the northern Caucasus. At the same time the canal will supply a final solution to the Volga region power problem. Transporting of anthracite from the Donetz Basin to Nizhni-Novgorod by means of the Volga-Don canal will cost only half as much as the equivalent railroad transportation. It may be said without exaggeration that with the construction of the canal the anthracite of the Donetz Basin will really become a local commodity for the Volga region.

Notice should also be taken of another important waterway construction project. Plans have been prepared for the restoration and reconstruction, during the present five-year period, of the so-called Mariinsky system of waterways, which will link

up the Volga with the Neva River and the open Baltic Sea. This will form a great continuous waterway from the Baltic to the Black Sea in addition to that supplied by the Volga-Don canal. It is impossible to overestimate the economic and political significance of this waterway development.

Two other projects concerned with the development of internal waterways should be mentioned. In the northern Urals the Kama and Pechora Rivers are to be connected. In addition to the erection of a central hydro-electric power plant, the connection of these two rivers will supply an outlet for the resources of the Pechora regions and for the mineral fertilizers of the Solikamsk deposits of potassium to the routes of the Volga region. The aggregate cost of the portion of the Kama-Pechora canal which will be especially concerned with transportation is estimated at 30 million rubles. The other project is concerned with the construction of a continuous waterway between the Moscow region and the Volga River. The plan is to erect a series of locks on the Moscow River, the Oka River and their tributaries in two directions; the length of the one being about 1,000 kilometers and of the other about 600 kilometers. The aggregate cost of this development is estimated at 60 million rubles. The completion of this construction will pass beyond the limits of the present five-year period.

It is not necessary to emphasize the immense economic significance of this projected waterway development in the most densely populated and most highly industrialized section of the country. Both canal systems, the Kama-Pechora and the Moscow-Nizhni-Novgorod, with the Volga-Don canal, constitute an essential part of the complex system of the transportation lines of the Volga region. But the scale of these two latter projects is comparatively smaller than that of the Volga-Don canal. They are significant only for individual economic regions.

The development of waterways requires a great program of river boat construction. This is especially true because the available vessels on the Volga and Dnieper Rivers were greatly reduced during the Civil War. It is generally known that the best

part of the Volga River fleet, to the extent of about 200 units, was burned on the Kama River by the Kolchak army, retreating toward Siberia. The development of larger vessels and bigger barges, the mechanization of port equipment and warehouses and the introduction of Diesel engines show the character of the technical reconstruction of the waterway transportation.

The total capital outlay for all the projects connected with the development of the internal waterways is estimated to reach about 600 million rubles, of which about 275 million rubles will go to the construction of new vessels, about 120 million to the erection of necessary auxiliary structures and about 180 million to capital investments in the improvement and extension of the waterways.

These measures are intended not merely to take care of the growing freight traffic over waterways but also to secure greater efficiency of labor in waterway transportation. The problem of man power may perhaps best be seen in the fact that the average annual number of employees per million kilometer-tons will be reduced from 2.24 at the beginning of the present five years to 1.9 at its end. The index of power-days will be reduced from 2,107 to 1,963. The general reduction in the cost of transportation over internal waterways is expected to reach no less than 30 per cent during the present period.

It is quite obvious that the construction projects enumerated above constitute only a small beginning toward the development of waterway transportation in the U.S.S.R. on a really large scale. The existence of many great rivers make such an extensive development possible; and the vastness of the country makes it absolutely essential. But this great development will take place beyond the limits of the present five-year period.

4. THE DEVELOPMENT OF IMPROVED ROADS IN THE U.S.S.R.

Perhaps the real curse of the land of the Soviets is the absence of improved roads. It is impossible to imagine a more baneful heritage than that which the Soviet Government received from

the autocracy and capitalism with respect to the condition of the highways, especially in the dense agricultural regions. The loss to the economic life of the country every year as a result of this poor condition of the roads is tremendous. During the pre-war period these losses were estimated at about 400 million rubles a year. Now they are probably much higher, as highway traffic has greatly increased. These shackles paralyzing the economic life of the Soviet Union must be broken. The country must end this total lack of improved highways. The Five-Year Plan provides for very extensive work in this direction. But let us say right here that even these provisions are inadequate, and that the course of highway development will proceed at a substantially greater rate than was expected until very recently.

There are almost 3 million kilometers of roads in the Soviet Union. There is a record of only one-third of them; and only on the recorded roads is there any kind of technical control. All the rest are mere country roads and by-ways without any social, state or other organized control. Out of 3 million kilometers of highway there are no more than 25,000 kilometers with a hard surface. These figures speak eloquently of the tasks and difficulties with which the country is confronted with regard to the improvement of highways.

The Five-Year Plan takes it as its first task here to single out 60,000 kilometers of trunk highways with countrywide significance and put them in condition for motor-car transportation. This is to be accomplished both by means of improving the present paved roads and new road construction. The new highways will either be paved or improved with gravel, asphalt, or other surfacing, depending upon local conditions. At this moment large-scale experiments are being made to determine the type of road which is most adapted to the nature of the various regions. Many experimental roads are being built for this purpose.

The total capital outlay for this special group of improved highways is estimated at about 600 million rubles, during the period. There is, however, no doubt that since the tempo of building in the motor vehicle industry has been greatly increased

as compared with the original provisions of the Five-Year Plan, it will also be necessary to put considerably larger capital investments into the building of improved state roads.

Of the larger projects in this field, mention must be made of the Aldan road which is to link the Usuri Railroad with the Lena River and which will provide transportation facilities for one of the richest gold producing regions of the Soviet Union. The construction of this road will be completed in 1931 at a cost of approximately 20 million rubles. Another great project is concerned with the construction of paved and improved roads in the cotton belt of Central Asia and in the great plains, where the *sovkhos* (state farms) and *Kolkhoz* (collective farms) are being established. Finally, mention should be made of the roads constructed in the Trans-Caucasian mountain passes, in Crimea, and on the coast of the Black Sea.

In addition to these highly improved roads, over a million kilometers of local highway will be improved for general vehicle and automobile traffic. The budgets of the local Soviets, the resources of various economic organizations, and the labor resources of the local population are mobilized for the accomplishment of this task. The total capital investment in such roads is estimated to reach during the present five-year period 1.5 billion rubles. It is not necessary to emphasize the great importance of the initiative and active participation of the wide masses of the local population, as well as of the various social organizations, for the successful accomplishment of this great task. The Soviet Government has put this problem before the local units of the local self-government, thus referring it directly to the masses of the people.

The problem of highway construction is really an aspect of the gigantic and urgent task of the development of automobile transportation in the U.S.S.R. However unbelievable it may sound, it is a fact that the Soviet Government inherited from tsarism slightly less than 10,000 deteriorated and often entirely useless motor-cars; and this in a territory covering a sixth part of the earth and with highways totaling almost 2 million miles.

Pre-revolutionary Russia did not have a single automobile plant. Not one automobile was ever produced within the country.

Up to the present time the limited opportunities for the importation of foreign goods have interfered with the extension of motor-car importation from abroad. Despite that, however, 6,000 motor vehicles have been brought into the U.S.S.R. Great efforts have also been made, in recent years, to organize the manufacture of motor vehicles within the country. The two Soviet automobile plants, the Moscow automobile works, "Amo," and the automobile plant in Yaroslavl, have turned out 3,200 * automobiles of quite high quality and durability. But neither the import of motor vehicles nor the present rate of production could possibly meet the needs of this vast country, either with regard to its economic demands or its cultural developments. It is for this reason that in the working out of the Five-Year Plan and the consideration of the perspective of economic development the question of building the Soviet motor vehicle industry has taken so prominent a place. It is considered as one of the most acute and urgent problems with which confronts the present period of development.

We can quote a single example which will illustrate the determination with which the Soviet Government is pursuing the tasks it has put to itself. Hardly had the obviously insufficient five-year program for 120,000 trucks and 30,000-40,000 passenger cars been drafted when the Soviet Government, by special agreement with the Ford Motor Company, provided for the completion, in 1931, of the Nizhni-Novgorod automobile plant with an output of 100,000 cars a year.** It was further provided that while the plant is being put into operation, 72,000 additional motor vehicles are to be brought into the U.S.S.R. from the European Ford plants. In addition the output of existing automobile plants will be substantially increased.

There is no doubt that 400,000 automobiles will have appeared

* This number has since been substantially increased. The annual output of the Amo plant is now 3,500 motor trucks of 1.5 tons capacity.—*Ed.*

** The program has since been increased to 140,000 cars annually.—*Ed.*

on the highways of the Soviet Union by the end of this five-year period, as compared to the 20,000 at its beginning. It is also quite certain that immediately the Nizhni-Novgorod plant is completed, the Soviet Union will start the construction of several others with a capacity calculated to meet the demands of the growing economic life of the country and of the rising cultural level of the population. This construction will make possible the development of automobile transportation in the U.S.S.R. on a large scale. Special attention should be called to the great public interest aroused in this development. Worthy of notice is the voluntary association Avtodor which embraces wide circles of active workers and peasants of the Soviet Union. With this active co-operation of the people, the tractor and the motor vehicle will soon begin to traverse the highways of the vast stretches of the U.S.S.R. from one end to the other.

5. AVIATION

Even of more recent origin and still more novel to the Soviet Union is the development of airway transportation. It is quite apparent that the U.S.S.R. is a country where aviation should find an extensive field for its development. For aviation provides the only means of conquering the vast distances of the country, which demand ten or twelve days' travel even on the fastest railroad expresses. Aviation has also great opportunities in a country like the U.S.S.R. for surveying by means of photography from airplanes, for destroying various insects which are doing endless damage in the agricultural regions, etc.

Notwithstanding its very recent development, airway communication in the Soviet Union has already achieved substantial results. Two companies are doing business on the territory of the Soviet Union. These are the Soviet-German company, Deruluft, and the Soviet Companies Dobrolet and Ukrvozdukhput.* By 1927-1928 there were 12,000 kilometers of airway lines in opera-

* The Ukrainian air transport company, Ukrvozdukhput, has recently been merged with the Dobrolet.—*Ed.*

tion. Over 10,000 passengers were carried during that year a total distance of 1.5 million miles. In the same year airplanes surveyed and photographed 30,000 square kilometers and an approximately similar area was covered by them in the fight on injurious insects in fields and forests.

The Moscow-Berlin air-line enjoys wide and deserved popularity. Another air-line connecting Moscow, Kharkov, Rostov, Baku, Teheran (or Rostov, Sochi, Tiflis, Baku, Teheran) is also already quite popular and takes a prominent place in the system of communication between Moscow, Trans-Caucasia and Persia. The air-lines connecting Moscow with Central Asia and providing transportation facilities for Central Asia are gaining in popularity and importance. Steps have already been taken to open a permanent air-line from Moscow to Vladivostok.

Another phase of the question should be considered. Reference has already been made to the task which the Soviet merchant marine faces in the Arctic region. The exploits of the *Krassin* and the *Malygin* during the race to save the members of the Nobile expedition are still fresh in our memory. These ships were accompanied by Soviet airplanes. It is also generally known that Soviet airplanes and aviators took part in the hydro-geographical expedition to Novaya-Zemlya, in the expedition to the Karsk Sea in order to investigate the forest and fur resources there. The work of the aviators in establishing air communication with Wrangel Island is also well known. The place of aviation in conquering the Arctic is now obvious to everybody, and it is quite apparent that the Soviet Union will take a great part in this work.

Finally mention should be made of such periodic flights as that made by the airplane *Krylya-Sovietov* (Wings of the Soviet), of Soviet construction, through Europe, and that of the *Strana Sovietov* (Land of the Soviets) from Moscow to New York via the Pacific Ocean. Both these flights bear witness to the growth of commercial aviation in the Soviet Union. This makes it possible to expect tremendous aviation developments during the present period.

The Five-Year Plan for economic development provides for increasing the length of air-lines from 12,000 kilometers in 1927-1928 to 45,000 kilometers in 1932-1933,* the distance covered by the airplanes from 1.5 million to 28 million kilometers and the number of passengers from 10,000 to 110,000. In other words, the Plan provides for a tenfold increase in the airway transportation of passengers, freight and mail. Keeping in mind the vast distances of the Soviet Union the significance of air mail can easily be appreciated. It is not surprising, therefore, that the Five-Year Plan contemplates increasing the weight of mail and parcels carried by airplanes from 230,000 kilograms at the beginning of the Five-Year Plan to 4 million kilograms at its end. The air mail business is bound to and undoubtedly will greatly develop in the Soviet Union during the present five-year period.

Another phase of the problem is connected with airplane photography for the purpose of surveying. The Five-Year Plan contemplates so surveying an area to be increased from 30,000 square kilometers at the beginning of the period to 225,000 square kilometers at its end. During the same period the airplane flight against insects in fields and forests is to be extended to cover 120,000 square kilometers as against the present 12,000. The tasks of aviation are also extended in the lumber and fur fields of the far north.

According to the Plan the total capital investment in commercial aviation is to reach 175 million rubles during this five-year period. Of this amount 100 million rubles will come from the state budget. But no careful observer can fail to reach the conclusion that the capital investment in commercial aviation will greatly exceed the provisions of the Plan, and that the development of aviation will exceed the contemplated program.

* The latest revision of the Plan submitted by the chief inspector of the commercial air fleet to the State Planning Commission, provides for increasing the total length of the air lines to 110,000 kilometers by 1932-1933, and for corresponding increases in equipment. The total length reached 24,792 kilometers in 1929-1930, an increase of 34 per cent over 1928-1929.—*Ed.*

The first steps of young Soviet aviation leave no doubt that it is going to write many glorious pages into the aviation history of the world.

The above sums up, in a very general way, the perspective of transportation development in the U.S.S.R. Certainly there are great difficulties connected with this task. And we cannot overlook the fact that the scale of development in the field of communication is still rather modest, hardly providing the necessary facilities for the economic development and the socialist industrialization of the U.S.S.R. In this field, too, the limit is set first of all by the level of general industrial development of the country and the capacity of its manufacturing industries. In the next five-year period the U.S.S.R. will be in a position to depend on a more highly developed heavy industry than at present. It is for the development of these basic industries that most of the resources of the country are now mobilized. It is only after the major part of the task in the field of heavy industry is accomplished that a really extensive program of transportation and communication development in the U.S.S.R. can be launched.

CHAPTER IX

HOUSING AND CITY PLANNING

1. HOUSING CONDITIONS IN THE CITIES

IN 1913 Russia had a total population of 139.7 millions, of which 25.7 millions, or 18.4 per cent, lived in the cities. By 1922-1923, at the end of the Civil War and the beginning of the economic development of the U.S.S.R., the total population of the country was reduced 4.6 per cent as compared with 1913, and the city population by 14.8 per cent. This reduction in population was caused by the Imperialist War and capitalist intervention against the U.S.S.R.; by the wartime destruction of the productive forces of the country, the decline of industry and the great difficulties in supplying the population with food. The heavy mark of economic destruction lay over the entire country, and had the effect of depopulating the cities. It is necessary to give careful thought to the conditions prevailing a few years ago in order to appreciate the result accomplished during the period of rehabilitation and the great tasks which are before us now with regard to the development of city life.

As early as 1927-1928, that is, during the first year of this period, the cities of the U.S.S.R. had a population of 27.9 millions out of a total population of 151.3 millions. The urban, then, was 18.4 per cent of the total population. The Five-Year Plan contemplates that by 1932-1933 the total urban population will be no less than 35 millions, or 20 per cent of the 170 million total.* These figures show both the low level of the urbanization of the U.S.S.R. and the rather substantial rate of development of the cities during the present period. To be sure, 65 per cent of the total population of Germany lives in cities, and about 50 per cent of the total in the United States, while the proportions for

* In April, 1930, the urban population reached 30.7 millions or 19.4 per cent of the total, practically the ratio for the last year of this period.—*Ed.*

France and England are 46 and 70 per cent respectively. But the urban population of the Soviet Union has steadily increased during the last few years at an annual rate ranging between 5 and 6 per cent. In Germany the annual rate for the same time has been 1.05 per cent; in England 1.04 per cent and even in the United States only 2.5 per cent. The Five-Year Plan contemplates an increase of urban population in the U.S.S.R. by more than 25 per cent during the present period. In other words, the Plan looks forward to the present rapid city growth throughout these five years. There are reasons for supposing that the increase will be even greater than contemplated. Of the total number of 1,924 urban settlements in the U.S.S.R., there are only a very few which may be considered big cities. Moscow is the only city with a population of over 2 millions. Leningrad has 1.8 million inhabitants, and Kharkov, Kiev, and Tiflis each have over 500,000. The other chief cities are Odessa, Dnepropetrovsk, Baku, and Rostov, each having a population of over 200,000. Altogether there are 31 cities which have a population of over 100,000, and 60 cities having over 50,000. All the other towns are small and their housing conditions as well as their municipal public utilities, etc., are at a low stage of development.

More than in any other European country, the cities of the U.S.S.R. carry the marks of the Imperialist War, as well as the subsequent civil war, the blockade and the intervention. For more than six years there was no new housing constructed. Neither was there any renovation or repair of existing facilities. On the contrary, great housing destruction took place. Under these conditions the rapid growth of the urban population during the rehabilitation period of 1921-1928 was necessarily accompanied by the continuous reduction of the per capita housing floor space available in the cities. Only in 1927-1928 was the continuous reduction of housing facilities finally checked. At that time the average floor space available per person of urban population was only 5.9 square meters (63.5 square feet) while the average floor space available per person of the working population was even less, not exceeding 4.9 sq. m. (53 sq. ft.) per

person. It is apparent that these figures vary quite substantially for various cities. While Leningrad has available an average of 8.7 sq. m. (94 sq. ft.) per capita, Moscow has only 5.7 sq. m. (61.5 sq. ft.), and the available floor space in the cities of the Ukraine does not exceed 5.8 sq. m. (62.5 sq. ft.) per capita.

Worst of all is the fact that at the beginning of the great undertaking under the Five-Year Plan almost three-fourths of all industrial workers living in urban settlements had not more than 6 sq. m. (64.5 sq. ft.) of floor space each. In many industrial regions, and for many groups of workers, the average floor space available for living quarters fell to as low as 3 sq. m. (32 sq. ft.) per capita. The Soviet Government and public opinion pay special attention to this condition. The problem of housing in urban settlements is considered as one of the vital tasks of the entire Five-Year Plan. The liquidation of the gravest heritage of the capitalist order, which kept the Russian workers under poorer housing conditions than those described by Engels in his *The Condition of the Working Class in England*, constitutes one of the most important and difficult tasks of economic development in the U.S.S.R.

It should be noted that the Russian pre-revolutionary cities bore the strong impress of the feudal-commercial-capitalistic and bureaucratic régime. The typical plan of the pre-revolutionary Russian city consisted of a more or less well arranged central part devoted to administrative and commercial enterprises and institutions, and a few streets consisting of mansions literally drowned in flowers and surrounded by gardens giving evidence of exceptional luxury and belonging to the feudal, bureaucratic, commercial and industrial aristocracy; but all the other parts of the town consisted of hopelessly gray, poor, and dirty streets and suburbs where the toiling people in general and the proletariat in particular lived. In all the cities of the pre-revolutionary Russian Empire, the working class sections never had any general sewer or water supply system. Neither did they have electric lights, trolleys, or even sidewalks. The slums of the city of feudal-capitalistic Russia in all their unattrac-

tiveness have been many times described in Russian literature.

This horrible condition of the cities, left over from pre-revolutionary days, underwent further deterioration during the years of civil war. The Soviet Government had to face this problem of intolerable city conditions during the very first stages of economic rehabilitation and reconstruction. Out of the 160 million sq. m. (1.73 billion sq. ft.) of housing floor space in all urban settlements at the beginning of 1927-1928, about 74 million sq. m. (800 million sq. ft.) were nationalized. The rest, consisting mostly of small buildings, were in the hands of individual owners and tenants. The nationalized housing is either used directly for state, social and co-operative enterprises or is under the management of the municipalities. A growing part of the nationalized housing is being transferred to housing co-operatives or is rented to individual families. The building co-operatives have proved to possess great advantages in the field of housing and these co-operatives are gaining ever more recognition as the best means for the supervision and building of housing.

The conditions prevailing at the beginning of the efforts to provide normal housing conditions for the city population determined the tasks which are faced in this respect in the present period. As far as housing conditions in the village are concerned, the question is left entirely to the village Soviets and individual peasants. Neither the present condition of the state resources nor the present stage of technical development in the field of housing will permit the Soviet Government to undertake the task of regulating housing conditions in the countless villages of the Soviet Union. Only with the development of the socialized sector of agriculture, now gaining momentum, will the question of housing conditions in the villages become a part of the general housing problem of the Soviet State.

2. CONSTRUCTION OF HOUSING DURING THE PRESENT FIVE-YEAR PERIOD

Reference has been made to the low level of urbanization in the U.S.S.R. and to the backward condition of the physical and

technical culture of the existing Soviet cities. The shortage of housing and the lack of development of public utilities constitute, even at the present time, a striking contradiction to the rapid rate of growth of the city population and the immense task of providing housing and the necessary services for the great numbers of new workers finding employment in the city industries. The problem of new housing construction is arranged with a view toward the rapid growth of the cities, which is in itself a result of the policy of industrialization. It was also necessary to take into consideration the new geographical distribution of industrial enterprises and consequently of urban settlements. Finally it is based on the necessity to take the first elementary steps toward the reconstruction of all living conditions in the cities.

The Five-Year Plan provides for the construction of new housing in the cities with a view of increasing the floor space available for the city population from 5.7 sq. m. (61.5 sq. ft.) per capita at the beginning of the five-year period to 6.3 sq. m. (69 sq. ft.) at its end, and with a view of increasing the available floor space for the industrial workers from 5.6 sq. m. (60 sq. ft.) to 7.3 sq. m. (79 sq. ft.) during the same period. Naturally this is a very modest program; it might be said to be quite insufficient. But even this means increasing the available housing facilities from 160 million sq. m. (1.73 billion sq. ft.) in 1927-1928 to 213 million sq. m. (2.3 billion sq. ft.) in 1932-1933. In other words, taking into consideration the depreciation of existing buildings it will be necessary to build 62 million sq. m. (665 million sq. ft.) of floor space, new housing. Of this, 42 million sq. m. (452 million sq. ft.) will become part of the socialized sector, and 20 million sq. m. (216 million sq. ft.) will be built in the private sector.

The carrying out of this program of housing construction will greatly strengthen the position of the socialized sector in residential buildings and will almost eliminate the necessity for the workers to rent from private landlords. The computations of this program are based on the consideration that about 80

per cent of city workers will be housed in buildings of the socialized sector; that is, in houses belonging to industrial enterprises, municipal organizations and housing co-operatives. The great social and technical significance of this arrangement must not be underestimated. The socialization of housing and the provision of socialized houses for the great majority of the working masses will finally put an end to any possible exploitation of tenants, which would otherwise be almost inevitable as a result of the acute housing shortage characteristic of the present stage of development of the Soviet cities, and which will no doubt continue for the years of first, rapid industrial growth.

The state industries of the U.S.S.R. form an important factor in the construction of new housing. Great industrial enterprises had available for the worker 10 million sq. m. (108 million sq. ft.) of floor space for housing in 1927-1928. By the end of the present period their available space will reach 23 million sq. m. (250 million sq. ft.). This will enable industrial enterprises to provide housing for 1.3 million people as against the 720,000 cared for at the beginning of the five-year period. In other words, the percentage of the workers which will be provided with housing facilities by the industrial plants themselves will increase from 34.6 at the beginning of this period to 46 at its end. Only slightly less than half of all the workers of the great industrial enterprises of the U.S.S.R. will thus secure housing accommodations through industrial plants by the end of the five-year period. The new houses constructed by the industrial enterprises are of a type best adapted to the needs and interests of the workers. They are situated near the plants and are provided with all necessary facilities for a normal, healthy life.

Almost as important in the construction of new housing are the housing co-operatives which are developing rapidly from year to year and which are proving to be a vital force in the struggle to overcome the acute housing shortage in the U.S.S.R. If industry is to spend 1.5 billion rubles during the present five-year period for the construction of new houses, the housing co-operatives will spend about 1.3 billion rubles for the same

purpose. Even now the housing co-operatives are constructing almost entirely new residential sections in the great Soviet cities, and creating new urban settlements at great industrial plants. No wonder that the housing co-operatives show increasing popularity among the widest circles of the workers. The creative initiative and organized effort of the workers find a very effective outlet for their energy in the housing co-operatives.

The total capital outlay for the construction of new housing during the present five years will amount to about 5 billion rubles after discounting the 43 per cent reduction in the cost of building materials during the period of their construction. Of this amount 1.5 billion rubles will be invested in housing by the industries, 1.3 billion rubles by the housing co-operatives, 420 million rubles by the transportation systems, 780 million rubles by the municipalities, and 960 million rubles by individuals. In analyzing the general rate of investments in housing construction and the share of all capital investment devoted to the construction of new housing, it is apparent that the Soviet Union is in this respect lagging behind the leading capitalist countries and especially behind the United States of America. There is a good reason. The first stage of industrial development demands that all the resources be directed primarily to the construction of new industrial enterprises, electric power plants, railways, etc. The lack of accumulated capital in the Soviet Union, the difficulties connected with carrying out the great program of industrialization by means of the current accumulation of capital, and without foreign credit, makes it impossible to devote greater sums for residential construction during the present stage of development. The construction of new housing on a scale which would put an end to the housing shortage and meet the growing demands of the urban population of the U.S.S.R. will not be possible within the limits of the present five years.

To be sure, side by side with the problem of contemplated new housing construction, comes the program for the construction of various municipal enterprises and institutions. The general program of municipal construction will demand a capital out-

lay of over 2.5 billion rubles during the present period. This program aims to provide greater public facilities for the proletarians of the existing cities, and the necessary municipal enterprises and institutions for the newly built urban settlements. The impartial observer of Soviet cities cannot help noticing that the workers' sections of the cities, which formerly were slums, are now provided with an increasing number of such conveniences as electric lights, trolley cars, water mains, sewers, and other public utilities. This provision has proved an exceptionally difficult task. In many cases it would pay rather to demolish entirely those slums and put up altogether new working class settlements than to attempt a reform. In many Soviet cities and urban settlements entirely new streets and sections of well-built houses provided with modern conveniences have grown up instead of the former slums, which have disappeared. Moscow, Leningrad, Kharkov, the cities of the Donetz Basin, Erivan, at the very southern point of the Soviet Union, Ivanovo-Voznesensk, Novo-Sibirsk and other cities, pride themselves now on the new sections which may justly be considered as foundations for future workers' garden cities. The real problem now is the extension of present construction over a wider area, and greatly increasing the tempo of construction.

The construction of new housing is not proceeding at a uniform rate in all the cities of the U.S.S.R. There are some in which the available housing space is substantially above the average. There are others which still suffer from an acute housing shortage and are therefore in need of greatly accelerated residential construction. There are cities like Leningrad, Kiev and Odessa, which, because of the peculiar condition of their economic development, are not undertaking any extensive construction of new housing. On the other hand, there are cities like Moscow, Kharkov, Dniepropetrovsk, Zaporozhie, the cities of the Donetz Basin, Ivanovo-Voznesensk, Stalingrad, Nizhni-Novgorod, the cities of the Ural region, Novo-Sibirsk, Baku, Erivan and others, which are carrying forward an accelerated program of residential construction, almost at the rapid rate of their population

growth. Some Soviet cities, especially during the construction season, seem to have just passed through an earthquake. The streets are dug up everywhere: entire blocks are under construction, and under the framework of an old town an entirely new city grows.

During the present period it will still be impossible for the State to undertake any serious tasks in the field of housing construction in the villages. Village houses are scattered, distributed as they are among 26 million individual peasant holdings; they are on such a very low level of technical and cultural improvement, and the absence of any kind of community institutions in the villages is so conspicuous, that it is impossible for the State to take an active part in their reconstruction unless it is possible for it to make really staggering capital investments. As a result of these conditions, the activities of the State during the present five-year period in the field of housing in the villages will have to be limited to improving the supply of materials for village housing construction, popularizing the employment of fireproof materials, conducting an educational campaign in favor of a more rational type of village houses, and finally, attempting a type of village planning which will bring the villages in greater harmony with the new conditions of soil cultivation and general agriculture.

In this field, too, serious problems are arising in connection with housing construction for the socialized farms. The state farms are already making plans for a great program of housing construction. In the larger collective farms the problem of improved houses with greater facilities for cultural life is becoming most urgent and acute. There is no doubt that the socialized sector of agriculture will supply the wedge for the entrance of the State into one of the most gigantic problems of the Soviet Union—that of housing construction for the rural population. It is precisely because of the immense sweep of this problem, the staggering capital investments which are necessary for its solution, and the great organization difficulties involved that its solution must fall within a later period.

3. THE NEW TYPE OF CITY

It is quite obvious that the city construction which is carried on at present in the U.S.S.R. is planned with the view of meeting the most urgent and immediate needs of the population. No real city planning is, therefore, possible at the present time. The rapid growth of the industrial centers, the necessity to supply workers for new industrial enterprises and the enlarged old ones, the rapid growth of the city population and the lack of capital resources, together have the effect of forcing housing construction to assume an insufficiently organized, hasty and scattered character. But since the rate of new construction is rapidly increasing every year; and since every newly erected worker's house, every new street, block or settlement, helps to determine living conditions for many years to come, the problem of city planning is gaining in importance. It becomes necessary to take up the problem of housing construction in the U.S.S.R. in its widest scope, and to determine the lines upon which the construction is to be carried on in accordance with the general tasks of socialist development.

More and more frequently, and with ever greater emphasis, the working people and the various social organizations and individuals engaged in the work of housing construction demand that plans be prepared for the reconstruction of the existing cities and especially for the building of new city settlements in connection with the industrial enterprises and plants which are now under construction. Many such large cities as Moscow, Kharkov, and Kiev, have already prepared the first drafts of plans for the total reconstruction of these cities. We are on the eve of great scientific works and great social movements linked up with the determination of the character and type of socialist cities.

In the leading capitalist countries a great deal has been done during the last decade in the field of city planning in accordance with the demands of modern technique and rational organization. International socialism frequently discussed this subject during the period preceding the Imperialist War. But city plan-

ning in the capitalist world cannot shake off its capitalist character. However high its level, from the point of view of material and technical resources, however perfect the isolated experiment of garden suburbs may be, they still are merely serving the interests of the upper bourgeois layer of society. Under capitalist conditions it cannot be otherwise. The problem of the rational organizations of the cities from the point of view of the interest of the bulk of the population and above all from the point of view of the proletariat, can be successfully solved only in a society whose organization is entirely subordinated to the interests of the widest masses of toilers. A really rationally organized city must be a socialist city. And there is no doubt that in the near future the scale of housing construction in the U.S.S.R., which is continually growing, will bring closer the practical solution of one of the most complex and fascinating problems of the creation of a socialist city. Here the construction of the genuine cities of the future is really being worked out.

CHAPTER X

THE PROBLEM OF SKILLED PERSONNEL AND THE CULTURAL UPLIFT OF THE MASSES

WE approach here a subject which properly speaking is outside the scope of the analysis of the economic perspective and economic development of the U.S.S.R.—the problem of skilled labor and the cultural uplift of the masses. However, no one can possibly overlook the great importance, we might say the decisive importance, of this problem to the fate of the entire socialist development of the U.S.S.R. It is therefore impossible to pass over it. The call for the consummation of a cultural revolution among the masses sounds through the whole Five-Year Plan and is felt in the course of actual socialist construction in the U.S.S.R. no less strongly than the slogans of socialist industrialization and socialist reconstruction of the village.

1. THE PECULIARITIES AND DIFFICULTIES CONNECTED WITH THE CULTURAL TASKS OF THE PROLETARIAN REVOLUTION

Lenin, in full agreement with Marx and Engels, constantly refers to the question of the great basic difference between the proletarian revolution, on the one hand, and all the types and forms of bourgeois revolution, on the other hand.

Lenin says:

One of the fundamental differences between a bourgeois and a socialist revolution is that for the bourgeois revolution, which always grows out of feudalism, the new economic organizations are gradually created within the old order by such means as the development of trade relations, which gradually change all the aspects of the feudal society. The bourgeois revolution was confronted with only one task; namely, to sweep away, throw off, destroy all the ways of the former society. Having accomplished this task every bourgeois revolution has

accomplished everything that is demanded of it, for in the final analysis it creates commodity production and increases the growth of capitalism. A socialist revolution is in an entirely different position. The more backward the country destined by the zigzags of history to begin a social revolution, the harder it is for it to pass from old capitalist relations to socialist relations. In this case, there are, in addition to the problem of destruction, new problems of unparalleled difficulty; namely, of organization. . . . The difference between the social and the bourgeois revolution consists in that in the latter case forms of capitalist organizations are ready, while in the former, the Soviet proletarian revolution does not receive these relationships ready made excepting in case of the most highly developed forms of capitalism, which after all embrace only a very slight upper layer of industry and hardly touch agriculture at all. The organization of an accounting system and system of control in the biggest enterprises, the conversion of the entire state and economic mechanism into a single great machine, into one economic organism working in such a way as to guide hundreds of millions of people guided by a single plan—this constitutes the gigantic organizational task which the Revolution has put on our shoulders. (Lenin, *Collected Works*, Volume XV, Russian edition.)

This peculiarity and these immense difficulties of the proletarian revolution find acute expression in the question of the qualified supervising cadres in administration in general, and the organization of the directing technical and economic personnel, in particular. Having smashed the state machinery of the bourgeoisie, and, in the storm and stress of the proletarian revolution, conquered the power of the State, the working class, in starting to create its own state organization—basically different from that of the bourgeoisie—has no prepared cadres of technicians and intellectuals. On the day after the victorious October Revolution, being faced with the gigantic organization task of converting the entire state politico-economic mechanism into one single great machine, one economic organism working to guide hundreds of millions of people according to a single plan, the Soviet proletariat not only had no loyal qualified cadres of its own, but was confronted with the active opposition and sabotage of the old technicians. These pages from the history of the October Revolution are still fresh in everybody's memory.

Among the most important elements of Leninism are the questions of the cultural problem during the period of transition, the

relationship of the rising proletarian to the inherited capitalistic culture, now in process of destruction, and the attitude of the Soviet State toward bourgeois specialists. In his speech to the IX Congress of the Communist Party in March, 1920, Lenin gave a broad historical survey of the entire problem.

The bourgeois intellectuals, who are not pleased with the course of socialist construction, and who are anxious to slide back to capitalism, are even now inclined to reproach the proletariat for an alleged insufficient respect for science and the carriers of scientific knowledge. It is not necessary to say that across the Soviet frontiers the White Guards and the reactionary foreign press continue to tell stories about the alleged persistent hostility of the victorious proletariat of the Soviet Union to so-called cultured society and to the representatives of scientific thought. All this talk is, of course, pure nonsense. There is hardly another country in the world where scientific work is getting so much support from the State as in the land of the Soviets.

In numerous articles and reports Lenin persistently and emphatically elaborated the necessity of learning from the capitalist, and bourgeois specialists, and the enlistment of their aid. In a polemic against Bukharin, at that time a "Left" Communist, Lenin said:

To conceal from the masses that the enlistment of bourgeois specialists who are given an exceptionally high compensation is a deviation from the principles of the commune would be to stoop to the level of the bourgeois politicians. To openly explain how and why we made a step backwards and then to discuss publicly what means are available in order to recover the loss is to make the masses learn from actual experience in working with the enlisted specialists how to build socialism. . . . It is necessary to enlist a thousand men, first-class specialists in their respective branches, who are devoted to their work, who love large-scale production because they know that in large-scale production a high level of technical efficiency is reached. And when it is said that it is possible to build socialism without an apprenticeship to the bourgeoisie, I know that such words come from the psychology of the inhabitants of central Africa. We cannot imagine a socialism not based on all the lessons derived from large-scale capitalist culture. (Lenin, *Collected Works*, Volume XV, Russian edition.)

In another place Lenin said:

Only those are worthy of the name communist who understand that it is impossible to create or introduce socialism without taking lessons from the organizers of what has been created by the trusts. For socialism is not an idle invention but an appropriation by the proletarian vanguard, who have conquered the power. It is an appropriation and an application. We, the party of the proletariat, and the proletariat, can secure the ability to organize the largest enterprises of the trust type only from the first-class specialists of capitalism. (Lenin, *Collected Works*, Volume XV, Russian edition.)

With tireless persistence and energy Lenin developed the idea of the necessity for a critical appropriation of the bourgeois cultural experience and for enlisting bourgeois specialists for that purpose. At the VIII Convention of the Russian Communist Party in 1919 he again took up this question. Later he raised it again and again, always extending its scope to meet the growing complexity of the problems. In discussing this question Lenin repeatedly emphasized the fact that a break would inevitably take place among the specialists themselves, and that this break would increase in proportion to the successful advance of socialist construction. In this connection he expressed the thought that it is necessary to gain the adherence to socialism of the best of the bourgeois specialists and of the old intelligentsia. In a remarkable article, published in February, 1921, in the course of discussing a certain economic project, Lenin makes the following enlightening remarks on the relationship between Communists and specialists on the State Commission for the preparation of a plan of electrification. Lenin says:

The task of the communists in the State Commission for Electrification is to refrain from commanding, or rather not to command at all, but to approach these scientific and technical specialists (who in most cases are inevitably steeped in capitalist predilections and attitudes) with every care and tactfulness, learning from them and helping them to widen their horizon, starting out from the data and achievements of the respective sciences. It is necessary to remember that if the engineer is ever to come to communism he will do so not in the same way as the underground worker, the agitator and writer, but through the portals of his science: equally the agronomist will come to communism

in his own way; and this holds good for every technician and scientist in his own field.

Thus, the Soviet proletariat, the leading power of the October Revolution and of the Soviet socialist construction, proclaimed through the lips of its leading genius and organizer a program for the enlistment of the cadres of technicians who have grown up under the conditions of capitalism. In practice, this program has been carried out with a view to accomplishing the economic regeneration and the cultural advance of the country. There is no question that this task has, in the main, been successfully solved. Wide circles of old intellectuals have already largely linked their fate to the fate of socialist construction in the U.S.S.R.; and this process is assuming ever greater proportions.

It would be a mistake to over-simplify the complex social and political processes which have taken place during the last two years within the ranks of the old intelligentsia in the widest sense of the term, in connection with the general shifting of class positions in the Soviet Union. No doubt substantial parts of the technical intelligentsia have come closer to the point of co-operating with the Soviet Government on the basis of this ideology of transition, no matter with what degree of clarity they recognized the ideology.

They expected that slowly but surely Soviet development would get off its socialist tracks and would revert to the road of "sound capitalism." But the victorious course of socialist construction, the beginning of the socialist reconstruction of the entire national economy, the growing socialist offensive against the residues of capitalism, could not help but destroy their illusions of the transitory nature of the new régime, could not help but strike the inmost bourgeois nature of this layer of the intelligentsia. To a certain degree, it was inevitable that at this point a part of the intelligentsia should turn away from co-operating with the Soviet power and look for some new form of sabotage and direct opposition to the tasks of socialist construction. The opposition of the capitalist elements of the country to the great work of socialist construction found in these layers

of the intelligentsia its chief spokesmen and prophets. It is only from this point of view that it is possible to understand the period of counter-revolutionary sabotage which embraced substantial groups of the higher technical staffs of the country.

As is always the case, the average bourgeois and the philistines of all hues and colors developed a mad campaign against the Soviet Government in connection with the mining case.* On the other hand, the great interest that the general Soviet public has shown in this case bears witness to the sound class instinct of the proletariat who regarded it as a flagrant expression of the general conspiracy against socialist construction. The facts confirm this point of view. As the entire world now knows, a well organized counter-revolutionary group of saboteurs worked for several years in the most important branches of Soviet industry, including transportation and industries of importance for the defense of the country. This group was connected with foreign capitalist organizations and had for its purpose the undermining of the socialist construction of the U.S.S.R. and the paving of the way for foreign intervention and the restoration of capitalism.

It is thus increasingly urgent to prepare cadres of qualified proletarians for socialist reconstruction of the U.S.S.R. It is a task of overwhelming significance. It may be said without exaggeration that during the present critical stage of socialist construction in the U.S.S.R. the basis for the employment of the old bourgeois technicians is getting narrower. In the first place, their number is naturally reduced, and in the second, a certain layer of the bourgeois intelligentsia, which formerly hoped that the Soviet Union would gradually slide back to capitalism, can no longer maintain such illusions and is therefore passing to direct opposition to the victorious advance of socialism.

The preparation of proletarian engineers and technicians is not merely an economic but also a political problem. The Plenum of the Central Committee of the All-Union Communist Party, at

* Reference is made here to the case of the engineers of the Donetz coal mines who were tried for economic and technical sabotage performed in behalf of the former mine-owners and other counter-revolutionary groups abroad. —*Ed.*

its session in November, 1929, put great emphasis upon this question :

The Rights [that is, the Right opportunists of the Bukharin group] fail to understand that not merely economic necessity but the very process of political division among the specialists, when it takes place under conditions of acute class struggle, puts before the Soviet State, as one of the most urgent and acute problems of the times, the question of preparing new cadres of proletarian specialists.

The teachers of scientific socialism, including Lenin, have repeatedly compared the socialist and bourgeois revolutions from still another viewpoint, that of the importance of the great masses of the people in the socialist revolution and in socialist construction. In the bourgeois revolution there is, in the final analysis, a change only of the comparatively small social groups holding the reins of power. The deeper layers of the masses of the people continue to have no part in the administration of the state. The case is different in the socialist revolution. It not merely produces a change in the upper governing social group but it entirely destroys all classes. The socialist revolution is distinguished by the fact that with every new stage of its development it brings new strata of toilers, who under capitalism had a very low level of cultural and social development, into the great arena of social and political life, and makes them take part in the administration of the State. The masses of the people are drawn, in the full sense of this word, into the business of controlling the administration of the State and organizing the economic and cultural development. These masses develop ever new cadres of organizers out of their own ranks. Clearly, under these conditions the problem of the cultural uplift and education of the great masses of the people gains an entirely new significance as compared with that which it had under a capitalist régime. This is even more true when we take into consideration the unheard-of backwardness, the crying ignorance, the suppression and the semi-savagery in which tsarism kept the many millions of the masses of various races of old Russia even up to the second decade of the twentieth century.

Hence, besides the necessity of accelerating the preparation of qualified cadres for its economic and cultural development in the narrow sense of the word, the Soviet Union is also faced with the gigantic problem of opening the gateways of modern science and technique to the widest masses of the workingclass of the country.

It will be in place here to mention the excellent and deeply revolutionary discussions of this entire problem by Lenin in his polemic against the heroes of the Second International. This is what Lenin said in answer to their repeated claim that Russia was not ripe for socialism :

If in order to build socialism it is necessary to reach a certain level of culture (though no one can say what this definite "level of culture" is), then why not begin with the conquest by revolutionary means of the prerequisite conditions for this cultural level, and then, on the basis of the worker-peasant power and on the basis of the Soviet régime start the advance to catch up with other peoples.

Addressing the Mensheviks, Lenin said :

You maintain that in order to build socialism, civilization is wanted. Very well. But why was it wrong for us to establish the prerequisite conditions of civilization first by dispossessing the landowners and the Russian capitalists, and then starting the advance toward socialism? (Lenin, *Collected Works*, Volume XVIII, first Russian edition.)

Relying on the conquests of the October Revolution as prerequisite conditions for civilization, the Five-Year Plan unfolds immense tasks on the front of cultural development.

The problem of cadres of engineers and technicians for the Soviet Union is now more acute than any of the problems of cultural development. It is naturally so. The rapid tempo of industrial development, the wide front of new construction in industry, transportation, large-scale production, agriculture, housing, and public utilities, makes ever greater the demand for engineers, technicians, scientific investigators, construction specialists, builders, and organizers of every type. The present

cadres of the old engineers and technicians, insufficient as they obviously are, are passing through deep processes of stratification at the very moment when the socialist construction is to be carried to successful completion. The problem of engineers and technicians has accordingly become vital to the U.S.S.R.

2. ENGINEERS AND SKILLED WORKERS

At the beginning of the present five-year period all of Soviet industry had at its disposal only about 16,000 graduate engineers, 17,000 technicians who had completed a technical school, and 25,000 so-called practical technicians, technicians, that is, without any engineering education but with more or less substantial technical experience. Upon the shoulders of these 58,000 engineers, technicians and foremen of Soviet industry lay the most difficult problems of maintaining the very high rate of exploitation of the existing industrial enterprises, which was growing continuously greater. They also had to take care of the thorough and radical technical reconstruction and the extraordinarily rapid new construction. The engineers and technicians of the U.S.S.R., nearly all of whom have grown up under the conditions of the capitalist factory, have to solve the construction problems of the U.S.S.R. under the entirely different conditions which prevail in socialist enterprises. The cadres of engineers and technicians accordingly are confronted with problems resulting from the socialist arrangements prevailing in the Soviet factories and from the special régime of social and proletarian life which is characteristic for them besides those of technique.

If we take into consideration the total number of workers employed in Soviet industry, it is quite apparent that the present number of engineers and technicians is entirely insufficient. In 1927-1928, at the beginning of the five-year period, there were only 0.67 engineers with a university education and 0.69 engineers with secondary technical education to every 100 workers. However different the qualifications of various classes of engineers in various countries may be, it is still possible to make certain comparisons in order to show how acute the shortage

of engineers in Soviet industrial enterprises is. It is sufficient to point out that according to the 1925 census, Germany had 2.2 engineers and technicians for every 100 workers. Of this number there were 1.06 with a university education and 1.14 technicians. Most striking is the shortage of engineers in separate branches of industry and especially in the most modern industries which reach the highest level of technique and rationalization.

The full significance of this backwardness of Soviet industry with regard to the number of engineers and technicians it has at its disposal becomes even clearer when we take into consideration the fact that there is, at present, a substantial number among the highest technical personnel who are either hostile or at best neutral toward the socialist construction. By no means all of the engineering personnel is really enthusiastic about socialist construction. It is impossible to overestimate the political and economic significance of counter-revolutionary sabotage on the part of certain engineers. Only the exceptional advantages presented by organized economic planning and the devotion of the working class to socialist construction have made it possible to achieve such high rates of development on the basis of the old fixed capital and in spite of the obviously insufficient number of engineers and technicians.

The program for the preparation of engineers and technicians during the present period has been prepared with a full appreciation of the limitations set by the shortage of technical personnel on the further industrial development of the country. The program provides that by the end of these five years, Soviet industrial enterprises shall have over 60,000 engineers with a university education and over 90,000 technicians with a secondary technical education. To accomplish this task it will be necessary to give 40,000 new engineers a university education and about 75,000 technicians a secondary technical education. As this program is carried out, the ratio of engineers per 100 workers will increase from 0.67 to 1.5, and that of technicians from 0.69 to 2.23. This will approach the normal ratio prevailing

in advanced European countries, and will also make for a better balance between engineers and technicians in industrial production.

It is enough merely to state this task to understand how immense it is and what great difficulties are connected with its accomplishment. To almost treble the engineering and technical personnel of industry during five years would be a hard task even for countries with a higher cultural level than the U.S.S.R. Still, the entire course of industrial development imperatively demands that it be done, and there is no doubt that the task will be accomplished. Somewhat later we will consider the means and methods for the solution of this grave problem.

No less important is the problem of preparing the necessary engineering and technical personnel for transportation. At present railroad and water transportation have available about 5,000 engineers with a university education and about 10,000 technicians with some technical education, whereas the number of graduate engineers and technicians with special education required by the transportation system amounts to 11,500 and 29,000 respectively. A large proportion of the places of such engineers and technicians are filled by men with mere practical experience and no technical education. As to the social composition and the political orientation of the engineering and technical personnel of transportation, all that was said about the engineering and technical personnel of industry may be applied here without modification. As an illustration of the processes of political differentiation taking place among the technical personnel of transportation, the case of the execution of three leaders of the counter-revolutionary band of saboteurs, embracing a fairly extensive circle of high railroad executives, may be mentioned. It should be noted that these leaders were former shareholders of private railroads and executives of state railroads under the Tsars. The problem of preparing an engineering and technical personnel for the needs of transportation is no less acute than is the case with industry, but is less com-

plex, for the kind of skill demanded here is more definite and constant.

By the end of the present five-year period the total number of engineers in transportation will reach 17,300 and the number of technicians with secondary technical education will reach 42,000. In this case it will be necessary to more than treble the engineering personnel and almost to quadruple the number of highly qualified technicians. Those acquainted with the difficulties and time demanded by a university education in transportation engineering will understand that we are faced with none too easy a task.

Finally, in addition to industry and transportation, there is another front on which the problem of technical personnel is no less urgent and acute, namely, the construction industry, in the broad sense of this term. From the above it is clear that during the present period the construction front will be extended immensely. Twenty billion rubles are to be invested in industry, including electrification, ten billion in transportation, about eight billion in housing and town planning, etc. This will demand a great personnel of specialists to insure the modern character of the construction, the lowest possible cost and a tempo exceeding even the American. Then, the construction of housing in the cities and their provision with the necessary modern improvements, raise many new and peculiar problems resulting from the socialist character of the organization and social life of the U.S.S.R. It is for this reason that the Five-Year Plan provides that the number of civil engineers with a university and secondary technical education be increased during the present period from about 2,000 at its beginning to above 20,000 at its end. It is quite possible that these computations are based on some exaggerations resulting from the novelty of this work and the difficulties of giving accurate statistical expression to the perspectives of the developments in construction. But even if the figures should be subjected to some partial correction the sweep of the problems connected with the preparation of a skilled

personnel for industry, transportation and construction will not be reduced in any way.

Finally, this group of questions concerning the engineering and technical personnel includes the new demands of agriculture. The agriculture of pre-revolutionary Russia had no engineering or technical personnel with the exception of that dealing with some special problems such as large-scale irrigation, substantial draining works, etc. The agronomists of pre-revolutionary Russia were not engineers or organizers. They were mainly propagandists and popularizers of agricultural knowledge among individual farmers. The entire attitude of agricultural schools and agronomists of old Russia was based on the foundation of the inviolability of the holy rights of private property to land and on the immutability of small-scale agricultural production on scattered peasant holdings. Only on the very large estates, and in the cases in which these were worked, not by means of subleasing or sharing, but on a large mechanized scale, did there appear individual organizers of agricultural production on an industrial basis. During the period which has elapsed the Soviet Government has not really made any radical change in agricultural education. Because of this, the difficulty of the tasks with which we are now confronted is greatly increased.

At the present time over 11,000 agronomists with a university education and about 27,000 agronomists with a secondary agricultural education are working in the fields of the Soviet Union. Reference has already been made to the fact that the character of their education and the attitude assumed by them in their work have been formed under conditions of small-scale peasant agriculture. This situation will change radically during the present five-year period. The process of agricultural collectivization is having an unparalleled growth. Equally impressive is the development of large-scale mechanized agricultural enterprises of an industrial type. Hence, according to the preliminary computations, which are as yet incomplete and which obviously underestimate the actual development, the collectivization of agriculture by the end of the five-year period will require about

5,000 engineers and 30,000 agronomists with a university education; and about 20,000 technicians and about 30,000 agronomists with a secondary technical and agricultural education. This does not, of course, include the hundreds of thousands of tractor drivers, mechanics, etc., who will have to take care of the tractors, harvesters and other complex machinery. Finally, there should be added the necessary training for those peasants who are acting as organizers and administrators of the collective farms, a task, however, which becomes a matter of course in the very process of collectivization.

In 1929-1930, when it became apparent that the scale of collectivization and mechanization of agriculture would substantially exceed the original computations of the Five-Year Plan, the Soviet Government found it necessary to issue a special decree providing for the preparation of 375 supervisors of state farms, machine and tractor stations and large-scale collective farms, 300 agronomists with a university education, 2,000 agronomists with a secondary agricultural education, 400 engineers specializing in agricultural mechanization, 2,000 technicians, 25,000 supervisors for the medium-sized and small collective farms, 40,000 tractor drivers, etc. The total capital outlay involved amounts to 35 million rubles. This practical step made by the Soviet Government in 1929-1930 under the pressure of the acute demands of the present day shows, better than any statistics, the character and the scale of the demands of agriculture for a new personnel of agronomists, engineers and technicians.

The demands for engineers and technicians specified above are concerned merely with the most strategic branches of national economy. If, however, the demands of the municipalities, commercial organizations and numerous other types of activities are taken into consideration, it will become necessary to supply about 100,000 to 110,000 engineers and about 180,000 technicians by the end of the five-year period. In other words, it will be necessary to provide 80,000 new engineers and 150,000 new

technicians during the five-year period. This does not include agriculture which has peculiar needs of its own.

It is not necessary to emphasize here that it is not merely a question of preparing engineers and technicians, it is rather a question of preparing engineers and technicians for socialist construction. Their education must be of a nature which will supply them not merely with a special knowledge but also with the necessary political training in accordance with the spirit of Communism. It is also necessary to emphasize the fact that the new cadres of engineers and technicians must come primarily from the ranks of the working class, agricultural laborers and the poorest and middle peasantry. Here lies the crux of the entire problem. The class origin of the technical intelligentsia is of especially great importance in the fate of socialist development. This is confirmed by all social history and by all the experience of the proletarian revolution.

In what way will it be possible to arrange for the training of these engineers and technicians? This is a most difficult question. For the preparation of qualified technicians demands considerable time. The process can be accelerated only to a very limited extent. At present there are, in the Soviet Union, 25 technical and engineering colleges (academies, institutes, etc.), which have a total of 49,728 students. There are also 2 railroad institutes with 3,050 students and 31 agricultural colleges with 24,451 students. In consideration of the demands of the national economy for technicians with a higher education the government last year adopted a decision to organize 47 engineering and agricultural colleges and 172 secondary technical schools during the coming two years.

During recent years the higher technical schools of the Soviet Union have graduated only about 7 to 8 per cent of their total number of students annually. The cause of this poor showing lies in the fact that life in the universities has not yet been sufficiently organized, that the students coming from the ranks of the workers and peasants have not been well enough prepared for college work, that the social processes taking place within

the universities are very complex and that the political conquest of the schools of higher education, as far as the innermost life is concerned, has naturally met with difficulties. However, whatever the cause may be, it is impossible to acquiesce to such a squandering of time, the most precious part of the entire problem. One of the most urgent tasks of the coming two years is, therefore, to increase the number of graduates from the higher schools of the country to 20 per cent of the total number of students in those colleges where the course is of four years, and to 15 per cent in schools with a five-year course. The enlargement of the school buildings, the extensive construction of dormitories for proletarian students, the increase of the staff in laboratories and libraries, and many measures of an organizational nature, aiming to maintain labor discipline in the schools, all have as their purpose the increase of the efficiency of work in the country's universities and colleges. It should be pointed out that for the year 1929-1930, the Five-Year Plan provides for the investment of 135 million rubles for construction work on schools of engineering and secondary technical schools alone.

Upon the carrying out of these measures and the attainment of the desired efficiency by the schools of higher education, they may be expected to graduate 58,100 engineers by the end of the five-year period, that is, about two-thirds of the number wanted. It must not be overlooked that the new engineering and technical colleges will greatly increase the number of their graduating students only during the first years of the next five-year period.

The question of preparing technicians presents similar difficulties to that concerned with the preparation of engineers. At the present time there are in the Soviet Union 123 secondary technical schools with 34,861 students, 41 transportation schools with 7,510 students and 191 agricultural schools with 28,965 students. As already mentioned, the Soviet Government in 1929 ordered the establishment of 172 new secondary technical schools during the next two years in order to provide for the preparation of this important element in the technical organization of indus-

try. The efficiency of the existing technical school is, relatively speaking, not higher than that of engineering colleges. One of the important problems of the time, therefore, is to organize the entire régime and teaching methods in these technical schools with a view toward enabling them to catch up with the tempo of economic development and the increasing need for qualified technicians. With this reorganization accomplished, the technical schools will be able to turn out by the end of the five-year period about 58,000 highly qualified industrial technicians, about 12,000 transportational technicians, and about 30,000 agricultural technicians, that is, about one-half of the total number wanted. Thus the preparation of technicians, just as that of engineers, in the respective schools, will obviously not be able to cover the demand as it develops during the course of economic development. Hence arises the problem of supplementing the cadres of graduate engineers and technicians in another way.

Reference has already been made to the large percentage of practical workers in Soviet industry and transportation. On the other hand, it cannot be overlooked that out of the tens of thousands of proletarians and peasants who have been awakened by the revolution and who have passed through the trying school of the imperialist and civil wars there came to the front a group of leading, active and intelligent people thirsting for technical knowledge and skill. Many of them have had decades of experience in industry in the capacity of skilled workers and foremen. Many of them have held high positions in the technical administration of industry for a number of years. The cadres of these people present unlimited opportunities for the enlistment and preparation, by means of special courses, of a sufficiently reliable and intelligent contingent of engineers and technicians.

The problem therefore is to develop numerous special institutes and schools for the training of men with considerable practical knowledge, in order to supply them with the necessary special knowledge and skill. A system of open laboratories, special consultations, correspondence courses, evening schools

and evening courses, technical libraries, stations for supplying students with tools and instruments, etc., is, under the present conditions of Soviet development, not a mere liberal form of extramural adult education, but an urgently needed means of training a skilled personnel. The Soviet Union is quite backward in this respect, even as compared with the system of extramural adult education prevailing at present in the leading capitalist countries and especially in the United States. But in this field the Soviet régime opens much larger perspectives than do capitalist countries. The leading organs of the Soviet State have brought this problem to the forefront and made it the center of public attention. It is fairly certain that the provisions of the Five-Year Plan for training 30,000 engineers and 80,000 technicians by means of extramural adult education will be carried out.

Even under these conditions, however, the needs of socialist industrialization for engineers and technicians will not be entirely filled. The shortage, however, is not very great. If we consider that, although all of these computations are more or less conditional they have still illustrated the fact that some engineering and technical shortage is not at all fatal to the scale and tempo of industrial development, the present condition does little more than illustrate the urgency of the task of training industrial specialists. It is still necessary to concentrate a really great revolutionary effort on this front, which is so important to the solution of the economic problems with which the Soviet Union is confronted.

Acceleration of the work of preparing engineers of its own does not in any way eliminate for the Soviet Union the need of enlisting the technical assistance of foreign experts. It is now generally known that the number of Soviet engineers and technicians going to foreign countries in order to take part in the operations connected with the purchasing of imported machinery and equipment and also for the purpose of participating in the engineering work done by foreign firms for the Soviet Union, as well as for studying technical and production processes in for-

eign enterprises and plants, is increasing every year. On the other hand, the best European and American firms are invited to do the engineering work on an ever greater number of great industrial projects, and hundreds of prominent foreign engineers and specialists are now working in the Soviet Union on the erection of various industrial enterprises, on the mechanization of agriculture, etc. The foreign trade plan of the present five-year period provides for a substantial increase in the capital outlay to be made for this item of imports, the importation of technical assistance. There is no doubt that the signal success of the industrial construction in the U.S.S.R., the enormous and inspiring scale of the developments, and the wide opportunities for technical reconstruction, will attract the interest of foreign specialists. There is a possibility that in the course of the continued construction many foreign representatives of science and technique will devote themselves entirely to the service of the socialist development of the U.S.S.R.

3. THE PREPARATION OF SKILLED WORKERS

In the preparation of skilled workers for industry, construction, transportation and agriculture, the Soviet Union faces no less responsible and difficult tasks than in the preparation of engineers and technicians. The present period will see the total renovation and tremendous extension of the entire productive apparatus of Soviet industry. It must not be forgotten that while the fixed capital of state industry amounted to about 8 billion rubles at the beginning of the five-year period, there will be an investment of 20 billion rubles in industry and electrification during the period; and the output of industry will more than treble. In 1929-1930 the output of Soviet industry was more than double that of 1919. Capital investments of 70 to 80 billion rubles in all branches of the national economy open an immense and variegated construction front. Industries, never before known in the country, will be developed. The development of machine production in agriculture is on a scale

without precedent not only in the U.S.S.R., but even in advanced capitalist countries. As a result we are facing the acute problem of developing highly qualified workers able to carry out the great construction program and to keep in operation the new machinery of production. The Five-Year Plan would be built on sand if it did not take care of the solution of this problem.

The question of their number comes first. It is however extremely difficult to fix, because the nature and degree of skill demanded by the various enterprises of industry and agriculture are not entirely settled. Nor has the distribution of skilled workers among the various branches of industry been fully determined. The economic journals of the Soviet Union devote considerable space to the discussion of the proper ratio of skilled workers to the total number of workers. This is an extremely interesting discussion which will undoubtedly make an important contribution to the solution of one of the most complex problems concerned with the preparation of the necessary skilled personnel. Still, the fact remains that at the beginning of the five-year period the skilled workers constituted only 41.8 per cent of the total number of workers in Soviet industry, while in Germany the percentage of skilled workers in 1925 was 62.6. However radical the reconstruction of Soviet industry during the present five-year period may be, it will still hardly be relieved from the necessity of increasing the percentage of its skilled workers to a level approaching that prevailing in Germany. But even aside from the proportion of skilled workers, the qualifications of the bulk of the workers of Soviet industry are obviously insufficient for the accomplishment of the gigantic task of the technical reconstruction of industry.

Every step on the road to new industrial construction and socialist rationalization of the existing enterprises imperatively demands that decisive measures be taken to raise the general technical qualifications of the industrial workers. Hence, in accordance with the contemplated development of industrial production and construction during the present five-year period, it will be necessary to train at least 1.5 million proletarians for

state industry alone, part of whom will be new workers and the rest workers already engaged in industry, but who must be developed into skilled workers. In addition it will be necessary to prepare 250,000 skilled workers for the building trades and about 500,000 skilled workers for transportation. Let it be emphasized that this is the minimum program, which will in all probability have to be extended during the actual course of industrial development. For instance, during the present year, 1929-1930, there are already 500,000 workers in training. But even the original program of the Five-Year Plan for the training of skilled personnel for industry, construction and transportation is quite essential, and its accomplishment means the surmounting of serious difficulties.

The collectivization of agriculture, amounting practically to the establishment of a soil cultivation industry in the form of state farms and collective farms, creates many new, peculiar and difficult problems. A new technical personnel of which the old Russian agriculture had no conception, will have to play an ever greater part in the development of agriculture. It is entirely impossible to make any computations in this field. Every season opens greater and more inspiring perspectives in the field of collectivized agriculture. It has already been mentioned that real developments in 1928-1929 and 1929-1930 surpassed the most daring contemplation of the Five-Year Plan. With these reservations it may be said that the agricultural army of skilled workers with industrial training, such as tractor drivers, mechanics, etc., will have to reach 400,000 to 500,000 by the end of the present period. All of these must be trained. We are leaving entirely out of consideration the question of educating the peasants, especially those who will be organized into collective farms, to an understanding of the most elementary agricultural-technical questions. According to the computations of the Five-Year Plan, their number will reach about 6 million, but taking into consideration the present actual course of collectivization it may be expected that their number will reach nearer to 10 million.

Taking into consideration the implications of the Plan and the actual course of development during the first two years under it, it is clear that the above computations with regard to the needs of Soviet agriculture for skilled labor are approximations and in all probability underestimations. In any case, a beginning has already been made toward carrying out of the program of preparation of skilled personnel. In 1928-1929 and 1929-1930, the number of workers in training reached about 500,000. Several special types of schools have been developed for the preparation of skilled workers.

In the first place, there are the apprenticeship schools at factories, plants and mills. Not that they are the most important factor in the training of skilled workers. In 1928-1929 these apprenticeship schools had a total of only about 100,000 students, and the number of graduates reach only to about 25,000. In the last year of the present period the total number of students in apprenticeship schools will reach 250,000, of whom 60,000 will graduate yearly. During the five-year period the apprenticeship schools will supply slightly over 200,000 skilled workers or only about 14 per cent of the total number required by Soviet industry. The significance of these schools, however, is in the close connection they provide between education and production. They are, therefore, the most perfect type of the labor school which, in the conception of the Soviet educational plan, must dominate the school system. The apprenticeship schools turn out, not merely technically well prepared workers, but also well educated workers, from a political viewpoint. Finally, they pave the way for a radical reorganization of the entire school system of the country in accordance with the principle of combining education with productive labor. It is, therefore, not surprising that during the present five-year period, 360 million rubles will be invested in the construction of such apprenticeship schools.

In the second place, the Central Labor Institute and its special educational shops will have to prepare over 100,000 skilled workers during the five-year period. This Institute employs special

educational methods which have been developed by the Institute itself. The careful observer of Soviet life has probably many times come across severe criticisms—some just and some unjust—of the Central Labor Institute and its educational shops. Many youth organizations and many educators have criticized the Institute, charging, first that the character of the training it is giving to skilled workers is too narrow, and second that its courses are mere generalizations of technical experience. The Institute is also sometimes reproached for taking up problems from a too narrow industrial point of view: it is said that it tries to train skilled workers with a view to a certain individual industry and even individual enterprises. The discussion which revolves around the Central Labor Institute shows the many points of view from which the question of technical education is taken up in the Soviet Union. The Five-Year Plan provides for the investment of about 50 million rubles in the educational shops of the Central Labor Institute.

The next place is taken by the secondary technical schools. During the present period about 50,000 students will graduate from such schools, supplying about 3 per cent of the total number of skilled workers necessary to Soviet industry. This field has not been developed as yet in the Soviet Union. First of all, no technical schools were left to the present régime from pre-revolutionary times. What is more important, however, is that the technical school which is not connected with the actual processes of production and which is outside the existing industrial enterprises, does not inspire sufficient confidence in the students and cannot find the necessary resources for the all-sided training of skilled workers. The fact, however, that the technical schools have made no substantial progress until now does not mean that there is no place for their development. About 200 million rubles will be invested during the present five years in their construction. There is good reason to believe that a radical change will take place in this respect during the present five-year period.

The preparation of skilled workers for industry in the various

types of schools will supply only about one-fourth of the necessary number of skilled workers. About three-fourths will have to receive their training through a variety of such extramural institutions for adult education, as evening schools, correspondence courses, etc. In our discussion of the problem of preparing engineers and technicians, it was emphasized how important it is to develop a well organized system of adult education. This also applies to the training of skilled workers. During the present period the Soviet Union has not a sufficiently developed net of technical and apprenticeship schools to regularly supply the growing industries with the necessary skilled personnel. The system of adult education will, therefore, play an important part in the solution of this problem. In fact, it is already exercising a great deal of influence in this respect. Whereas the institutions of extramural training took care of only 68,000 workers in 1928-1929, the number of their students increased to 460,000 by 1929-1930. It might be said that the country turned sharply on to the road leading to the type of technical education which demands but little time and which was shown by the experience of the leading capitalist countries to be best adapted to meet an urgent want. The budget of this system of adult education for the training of skilled workers is estimated, during the present five-year period, at about 125 million rubles.

Attention should also be called to the system of compulsory training of unemployed workers which is beginning to gain great popularity in the U.S.S.R. and which may become not only a means for the preparation of skilled workers, but also an effective method for the mitigation of unemployment. It must be remembered that while some trades suffer from substantial unemployment and while unemployment is especially high among the unskilled, there is an acute shortage of labor in many trades. For this reason a state system of teaching unemployed workers a trade or retraining them in a new trade will also contribute toward the total elimination of unemployment.

What has been^{*}said here with regard to the ways and means of preparing skilled workers for industry applies equally to the

training of transportation and building trade workers. The total capital outlay for the training of skilled workers for industry, construction and transportation, according to the computations of the Five-Year Plan, will amount to slightly less than a billion rubles. The experience of 1928-1929 and 1929-1930 shows that the planned scale of investments for the education of skilled workers and the tempo of their preparation, as provided by the Five-Year Plan, is actually carried out and even slightly exceeded.

4. THE PREPARATION OF RED SPECIALISTS AND THE PROLETARIZATION OF THE COLLEGES

One of the most interesting problems of Soviet development is that of the reorganization of the entire educational system; and especially by the proletarianization of the schools of higher education. This is an extremely complex and difficult task. It is a matter of regret that it is not sufficiently discussed by the general press of the Soviet Union. Numerous misunderstandings have accumulated with regard to this question. The semi-feudal and capitalist elements which until recently considered the schools of higher education as their special domain, do not stop at direct misrepresentation of the question. The Soviet universities and colleges are now the scene of the tempestuous and intensive work of tens of thousands of the new youth. A process of separation between various class elements, social ideologies and political sympathies is taking place. The proletariat is conquering the schools of higher education, reorganizing them and bringing them into accord with the tasks of socialist development.

The problem of forming substantial staffs of Red specialists out of the children of the workers and peasants acquired special importance during the transition from the rehabilitation period to the present period of new building. At that time the construction front was greatly extended, the socialist advance gained in force and sweep and the class resistance of the bourgeoisie assumed a new, more coherent and acute form. But the first

steps toward the proletarianization of the schools of higher education were made literally on the day after the October Revolution. This struggle accordingly has already a substantial history behind it and has already developed special forms of organization.

The first place among the ways and means of proletarianizing the schools of higher education and making them accessible to workers and peasants is in the methods of enrolling students. The representatives of the social classes who were shipwrecked during the revolution but who formerly had a monopoly of higher education and who formerly dominated the universities and colleges are now raising a great howl about "Red privileges" and the "preferences" given to workers and peasants for admission to the schools of higher education. They call this a violation of the principle of the "freedom" of academic education. The last of the Mohicans of capitalism shed tears over the destruction of the schools of higher education which fell into the hands of these uncultured vandals, the Soviet workers and peasants. The entire question, however, is really in this: that under the dictatorship of the proletariat it is necessary to make provision for the systematic and persistent introduction into the schools of higher education of ever new masses of the proletarian youth; it is necessary to make provision for the radical reorganization of the universities and colleges, subordinating them to the interests and needs of the socialist development. And in the U.S.S.R. such provisions actually are made. It is because of this class criterion applied in admitting students to the universities and colleges that the free admission of bourgeois elements is limited, deliberately and on principle. With equal deliberateness and firmness, every preference in the admission of students is given to the representatives of the proletariat and peasantry. It is not merely the law, it is the binding principle of the dictatorship of the proletariat. On this foundation is built the entire system of the admission of students into the schools of higher education in the U.S.S.R.

The elapsed decade of socialist development in the U.S.S.R. shows with what difficulties the realization of this important and

splendid task is connected; what long periods of time and what great efforts are needed in order to transform the schools of higher education from the lackey of the bourgeoisie into the servant of socialism. On the eve of the revolution the universities and colleges of old Russia had 47,200 students. Of this number 8 per cent came from the ranks of the hereditary nobility, 25 per cent from the ranks of non-hereditary nobility and the bureaucracy, 10 per cent from the ranks of the priesthood, 11 per cent from the ranks of the merchants, 25 per cent from the ranks of the petty bourgeoisie, 16 per cent from the ranks of the Cossacks and rich peasants, and about 4 per cent from all other elements of the population, including foreign students. The schools of higher education of pre-revolutionary Russia carried upon themselves the heavy impress of the feudal and capitalist classes, not merely by the nature of the educational system, and the ideology it developed among its students, but also by the very composition of the student body. This situation was entirely changed by the tenth year of the October Revolution. Out of the 159,700 students in the schools of higher learning, 25.4 per cent were children of workers, 23.3 per cent of peasants, 41.6 per cent of the working class intelligentsia and only 9.7 of "others," including a considerable number of non-laboring elements.

It should be mentioned that a substantial percentage of the student body consists of Communists and Young Communists. Soviet public opinion considers these achievements and changes in the composition of the student body of the universities and colleges as obviously insufficient and imperatively demands the determined further proletarianization of the student body. During the present year 70 per cent of all the students to be admitted into the schools of higher education of the U.S.S.R. will be of working-class origin. But even these achievements which are the result of ten years of persistent effort and intensive social struggle may serve as an example of what the proletariat of every modern capitalist country will have to go through after the proletarian revolution.

It is not enough, however, to open the doors of the universities

and colleges to the workers and peasants and to provide constitutional guarantees that they will have the preference for admission. The workers and peasants of tsarist Russia were taught the way neither to the schools of higher education, nor even to those of secondary education: 64.5% of the population was entirely illiterate at the time of the October Revolution. One of the most difficult tasks, therefore, was and still is, the preparation of workers and peasants for entrance into the schools of higher education. They must be given an opportunity to obtain the preliminary education which will enable them successfully to pursue their courses in the universities and colleges. Many educational institutions have been established for that purpose, but the Workers' Faculties, which were first formed in 1918, are the most important of them all. They are auxiliary institutions at the universities and colleges and their student body is made up exclusively from the ranks of the workers and the poorest and middle peasantry who have graduated from the reliable school of revolutionary work and struggle. During the past five years the Workers' Faculties have prepared 33,600 workers and peasants for entrance into schools of higher education. These Workers' Faculties will maintain their great importance until such time as the Soviet secondary schools are in a position to supply the universities and colleges with the necessary number of proletarian and peasant students. The total expenditure for the maintenance of the Workers' Faculties amounted to about 30 million rubles in 1928-1929, and will reach, according to the budgetary estimate, 58 million rubles in 1932-1933. During the entire five-year period the budget will amount to about 219 million rubles.

The so-called free individual enrollment plays an insignificant part in the composition of the student body of the schools of higher education and an even more insignificant part in the enrollment of the Workers' Faculties. To the entrance examinations of the universities and colleges of the Soviet Union are admitted candidates nominated by various organizations of workers and peasants or by Soviet social organizations in general. It

may be said that in the Soviet Union an organized process of social selection of the best elements for admission to the schools of higher education is taking place, as students are selected by social organizations, the confidence of which they enjoy. This is the social principle and the organizing practice prevailing at the present stage of Soviet development. No one will deny the numerous practical drawbacks which may still be possible and which are taking place even under this form of organization. Still, no one will question its progressive character when compared with the so-called "free" enrollment of students in the bourgeois schools of higher education, the "open" doors of which were always tightly shut to the children of proletarians and peasants.

A serious question faced by the Soviet schools of higher education is the question of providing for the students the necessary means of existence in the broad sense of the term. There are stipends, dormitories, dining rooms, and provisions for supplying the students with books and other auxiliary material. But the present condition is rather unsatisfactory, primarily because of the limited resources of the Soviet State. The Soviet Government and Soviet proletarian public opinion have repeatedly and persistently emphasized the insufficiency of the present provisions for the students. Still, there is no disputing the fact that in 1928-1929, 30,000 students of engineering and technical colleges alone received, from the State and from social organizations, subsidies to the total sum of 17 million rubles. To this amount should be added the sums received by the students under the so-called system of contracting which has lately developed on a very large scale. This system consists of a preliminary agreement entered in between a student and some economic organization such as a trust, syndicate, plant, bank, state farm, etc., under which agreement the student receives a subsidy of from 100 to 150 rubles a month during the entire three or four years of his education, in exchange for his agreement upon graduation to work a certain number of years for that organization. In 1929-1930 the economic organizations will spend 33 mil-

lion rubles under such contracts with students of schools of higher education. This contracting system not merely supplies substantial material assistance to the students, but also enables these economic organizations to exert the influence of their practical experience upon the internal life of the schools of higher education.

It is quite obvious that the provision for the material needs of the students will assume ever greater proportions as the schools of higher education become proletarianized. The time is undoubtedly not far off when extensive construction of modern dormitories and other auxiliary institutions to care for the Soviet student body will be started on a large scale. The acute shortage of skilled personnel and the extensive front of economic development, as well as the social tasks of the Soviet power, make certain the rapid progress of adequate provision for all material and educational needs of the students.

Another phase of the question which must not be overlooked is the energetic introduction of the system of continuous practice in actual production into all schools of higher education. This combining of higher education with practical education is known also in the capitalist world. Some capitalist countries supply extremely enlightening examples of the successful application of the method of continuous practice in actual production. In the Soviet Union the system not only has an educational value; it also serves as one of the methods of socialist education, bringing the students under the influence of the socialist arrangements prevailing in the Soviet factories, mills and similar enterprises. The system of continuous practice in actual production and the resulting close connection between the students of higher education and the factories and mills which constitute the center of the dictatorship of the proletariat are among the most important factors for the proletarianization and the socialist education of the universities and colleges of the Soviet Union.

Mention has been made of the tension in the present life of the schools of higher education; of the great rôle of the student organizations, which participate largely in the administration

of the universities and colleges; and of the important part played by the student organizations as initiators and propagators in the complex process leading to the alteration of curricula, programs, educational methods, etc. Let the prophets of bourgeois science and the belated representatives of the authoritarian school and pedagogy shed tears over the so-called licentiousness which allegedly dominates the life of the Soviet schools of higher education; let them talk about the all too large part of the student body in the administration of the school. It is not without reason that the revolution is compared with a hurricane, sweeping everything out of its way. The revolutionary reconstruction of the schools of higher education, in the accomplishment of which the student organizations have no insignificant part, is compelled to clear out of the way all resisting academic mandarins and to bring into line all those who are still bending under the conservative traditions of the authoritarian system of higher education.

The Five-Year Plan of economic development imposes great and responsible tasks on the schools of higher education with regard to the accelerated preparation of the necessary skilled personnel. But even as the economic program of the Soviet is based, not only on the development of the forces of production, but also on the kind of development which goes to strengthen the positions of socialism, so is the educational policy of the Soviet based not merely on the necessity of accelerating the preparation of skilled personnel but also on the necessity of preparing a personnel of Red specialists, trained in the spirit of persistent class consciousness and socialist ideology. Here lies one of the most important guarantees of the rapid rate and successful course of socialist development.

5. THE PREPARATION OF SOCIAL ORGANIZERS

The capitalist critics, blinded as they are by class hatred, attempt to represent the Soviet Union as an autocracy and to convince the entire world that social life is either entirely foreign

to the U.S.S.R. or is very limited in its scope. It is impossible to imagine a more absurd invention or more preposterous slander than that which the irresponsible and reactionary bourgeois journalists and the artful Social-Democrats of the Kautsky type, have combined to feed and maintain. The wide scope and frank character of the political and social life of the Soviet Union, and the active participation of the many millions of the great masses of the people in it, is the distinguishing feature of every proletarian revolution as well as of the proletarian revolution of the Soviet Union.

The fundamental principle of social organization and administration in the U.S.S.R. is to organize the consciousness and active initiative of the masses of the people and to put into commanding positions ever new cadres from the ranks of the workers and peasants. The part of social organizers in the best sense of the word is, therefore, especially important. Hence the problem of the preparation of social organizers. This problem gains in importance because the struggle to free the proletarian masses and the poorest and middle peasantry from the influence of the reactionary bourgeois "private property" ideas is not yet by any means ended.

Naturally, under conditions of Soviet democracy social organizers arise, develop and obtain a great measure of skill, primarily as a result of the very course of the social struggle and social work. The Red commanders and military leaders have graduated out of the civil war; it was only after its end that courses in military science were organized, and the Academy of the General Staff completed and extended their military education. The administrators and executives of industry and transportation developed during the period of tempestuous campaign of nationalization, during the struggle against economic disintegration and for the solution of the endless economic problems during the period of civil war, rehabilitation and reconstruction. The State Industrial Academy for the preparation of executives for industrial enterprises provides these practical fighting commanders on the industrialization front with the

necessary academic education. The active workers and administrators of socialized forms of agricultural production, the organizers of the great mechanized state farms and collective farms, and others in like fields, are born under our eyes in the very process of the work. This is especially true with regard to the social organizers, pure and simple. But even in this field, many educational institutions have been created since the October Revolution which in the final analysis have as their purpose the ideological and political education of this type of social organizer. These are the numerous institutions for Communist education and training.

In the first place, there are such veteran institutions of Communist education as the Sverdlov Communist University in Moscow, the Zinoviev Communist University in Leningrad, the Artem Communist University in Kharkov, the Communist University for the Toilers of the East, in Moscow. Tens of thousands of communist and non-partisan workers and peasants have received their education in these universities. From the civil war front, from the various sections of the economic front, from the numerous branches of the cultural front students have come into these universities. They are recruited from the ranks of those practical social workers who have gained prominence as organizers, executives and leaders on the larger and smaller sections of the reconstruction front of the U.S.S.R. They seek here a theoretical education in social sciences, a greater knowledge of social facts, a more clearly expressed and defined militant proletarian ideology.

In the second place, there is the Institute of Red Professors, in Moscow. It consists of members selected from the ranks of proletarian revolutionaries who have distinguished themselves on the military or construction fronts of the proletarian revolution. The most painstaking and careful selection is made in order to recruit the students of the Institute from the ranks of those who have distinguished themselves within the ranks of the working class by their ability to penetrate deeply into the facts and methods of the social sciences, as well as by their ability

for independent research. Several graduating classes of the Institute for Red Professors have supplied teachers of social sciences to schools of higher education, active workers for the economic front, daring fighters against bourgeois influences on the ideological front, proletarian journalists for the Soviet press and serious research workers in the fields of social science.

The Communist Academy of Social Sciences also belongs to this group, to a certain degree. This Academy and its numerous subdivisions have already gained a firm position for themselves, not merely in the work of organizing new cadres of Marxian investigators but also in raising a new generation of Marxian scientific workers.

Finally, while not directly engaged in this work, a number of institutions and educational activities contribute toward the accomplishment of the same purpose. To this group belongs the Industrial Academy, for the theoretical preparation of the practical workers who have become prominent in the work of industrial construction; the numerous courses for the preparation of executives for all sections of the economic front; and the systematic conferences which are devoted to the consideration of the immediate problems of economic development, but which at the same time serve as a special method for the preparation of organizers and administrators of the various branches of the national economy. It is impossible to estimate the number of workers who have passed through one to another form of these institutions for preliminary and preparatory education and training, but their number, in any case, reaches into the thousands and tens of thousands.

The Five-Year Plan of socialist development in the U.S.S.R. is not merely one of great projects. It not only supplies a program for the socialist advance on the economic front, but also outlines responsible tasks on the ideological front. It is impossible successfully to extend the front of socialist construction, or to eradicate once and for all the remnants of capitalism, or to repel successfully the desperate counterattacks of the capitalist elements, without making provision for safeguarding the extensive socialist

education and training of the great masses of the people in the U.S.S.R. The distinguishing feature of Bolshevism has always been the ability to combine practice with theory, to hold aloft the banner of theoretical work. The course of socialist construction in the U.S.S.R. is difficult; it is covered with thorns. It is carried to realization in a petty-bourgeois country. The socialist construction has to overcome not merely physical resistance but also ideological resistance. The most extensive struggle is now taking place on the ideological front of the U.S.S.R. The swords of communist ideology are crossed with the swords of the *Weltanschauung* of the outlived social formations on every sector of scientific work, art, morals, æsthetics, etc. The educational institutions referred to play no insignificant part in the development of cadres not merely of well-trained practical organizers but also of militant theoreticians fighting for the communist education of Soviet society.

6. RAISING THE CULTURAL LEVEL OF THE MASSES

The above outline supplies as far as possible a concrete picture of the methods employed by the Soviet Union in the preparation of skilled personnel for the various branches of the economic development as well as of the scale on which this work is conducted. It is impossible to overestimate the great difficulties and immense responsibilities connected with this work during this period of rapid reconstruction of the national economy. However, it is quite obvious that the problem of supplying the necessary skilled personnel cannot be solved outside of the general system of measures aiming to raise the cultural level of the great masses of the people. It has been repeatedly emphasized that what distinguishes the proletarian revolution from all bourgeois revolutions is that the proletarian revolution leads to the participation of literally all workers and peasants, all members of the toiling collective of the country, in the administration of the State. This condition alone makes for the enormous growth of cultural wants and for the

gigantic development of cultural work. But even from a more narrow point of view the problem of preparing skilled personnel coming from the ranks of workers and peasants can be solved only on the basis of great cultural mass activities, and a general raising of the cultural level of the country.

It is not necessary to emphasize at what low level of culture tsarism kept Russia. It is generally known that the indices of the illiteracy and cultural backwardness of the great masses of the Russian peasantry and even of the Russian workers were staggering up to the very eve of the socialist revolution. At the end of the second decade of the twentieth century tsarism kept Russia at that barbarian level of cultural development that is represented by 72.2 per cent of illiterates among the rural population and 40.6 per cent among the urban population. Under these conditions it is hardly necessary to say that the secondary schools, to say nothing of the schools of higher education, were the privilege of an insignificant handful of people and were tightly closed to the entire mass of toilers of former tsarist Russia. The distribution of books, newspapers, etc., was extremely limited and could not stand comparison even with that prevailing in other capitalist countries.

Thus in regard to the popularization of elementary knowledge, the elimination of illiteracy and the introduction of universal compulsory education, too, the socialist revolution had to accomplish in Russia what had already been accomplished in the leading western capitalist countries by the bourgeoisie, partly in the interest of exploitation and oppression. The most difficult and complex tasks of organizing the scientific work in research institutions and of developing cadres of advanced research workers, engineers and technicians, must be accomplished simultaneously with the elimination of illiteracy and the popularization of elementary common knowledge among the masses of the people.

The first place among these cultural activities belongs to the introduction of the system of universal popular education. It must not be overlooked that as early as 1927-1928 the total num-

ber of children in the elementary schools amounted only to about 10 million *i.e.*, to 87.2 per cent of the total number of children between the ages of eight and eleven. The Five-Year Plan has as its starting point the necessity of providing for the construction of school buildings and the preparation of a personnel of teachers on a scale which will guarantee that by 1932-1933 the elementary schools, or as they are called in the Soviet Union the labor schools of the first stage, will be able to take care of all the children of school age. That implies that by 1932-1933, the last year of the present period, the number of children in these schools will reach about 15 million. According to the most modest computations this will require the expenditure of 3 billion rubles during the present period—a sum included for this purpose in the budget of the Five-Year Plan.

It should be remembered that from its very inception, the Soviet Government declared in favor of the uniform labor school, subdivided into consecutive stages for various age groups, as against those class and guild schools which were characteristic of pre-revolutionary times and which, in the final analysis, still prevail even in the most advanced countries of modern capitalism. But the uniform labor school was considered not merely as the highway to elementary education for all the children of the country; it also had to serve as the basis for the reorganization of the entire educational system, and put the new pedagogy on a labor foundation.* The thought of a labor school was born in Western Europe. It is well known that the educational theory and practice of Western Europe and America has contributed not a little to the development of this educational system and to the carrying out of some interesting experiments

* The uniform labor school of the Soviet Union is based upon principles which come nearest to what is called in this country experimental education. The children acquire the necessary elementary knowledge by means of various activities consisting primarily of actual useful work, whether it be merely attending to their own needs as washing, cleaning and keeping in order the places where they live, taking care of domestic animals, gardening, preparing and serving their food, etc., or whether it be actual work in various shops. In this system academic education is carefully blended with practical and useful work. The older children of the Soviet schools get opportunities to work for certain hours in factories and mills.—*Ed.*

in this field. However, only the proletarian revolution, which put the proletariat at the head of the State and guaranteed the emancipation of the school from all remnants of feudalism, religion and scholasticism, etc., has provided a genuine opportunity for the reorganization of the entire system of education and training on a labor foundation. This very complex, novel and difficult task demands the most intensive effort and considerable time for its accomplishment. Over a period of ten years the best representatives of Soviet education and pedagogy concentrated their efforts on the task of putting this idea into practice. Many special pedagogical institutes, a great number of experimental schools, children's cities, which combine education with all the work involved, and many other experiments are the means through which it is sought to find the best methods for the practical realization in the educational system of the country of the new great principles of school education. The very interesting achievements in this field have been frequently described in the columns of the Soviet and foreign press.

We mention this in order that the difficulties which are in the way of the realization of the system of universal education based on these new methods may be appreciated. For, indeed, the task which the Soviet Union put to itself is not hastily to arrange for three- or four-year schools and as hastily prepare teachers with the old scholastic frame of mind, just so as to be able to maintain that the Soviet régime has among other accomplishments succeeded in producing universal elementary education. That would be a questionable achievement. The Soviet Union does not do things that way. However difficult it may be to reorganize the elementary school on the principle of labor, or learning while working, however great the obstacles, both from the point of view of resources and ideological deficiencies, it is still the only way for a real and effective reorganization of the schools. It is only by means of building up the labor school, combining education with work, that the school system may be brought into harmony with the tasks and interests of the socialist régime. This

is the way, with all the great difficulties that it implies, that the Soviet Union has chosen.

As early as the V All-Union Congress of Soviets, which was devoted to the consideration of the Five-Year Plan of economic development, many delegates justly protested at the slowness of progress in introducing universal elementary education. As a result, additional research work was undertaken immediately after the Congress, aiming to accelerate the development of the school system and to insure the early introduction of universal elementary education. The control figures for the year 1929-1930 show that the accomplishment of this task has really been accelerated. Indeed, the school construction program for 1929-1930 is based on the supposition that by 1930-1931 the elementary schools should have sufficient facilities for the accommodation of all the children of 8 years of age and over, excepting only those of the most backward provinces. In other words, in 1930-1931 the system of universal elementary education will already be practically introduced. The number of pupils in the elementary schools will reach 11.7 million in 1929-1930 and 13.5 million in 1930-1931. To accomplish this task it will be necessary to invest 650 million rubles in education in 1929-1930, as against 428 million rubles in 1928-1929. Of this total budget of 650 million rubles, 270 million rubles will go for the accelerated construction of school buildings. The appropriation for this purpose has thus been very substantially increased as compared with the original provisions of the Five-Year Plan. In this field, too, actual developments are surpassing the computations * of the Five-Year Plan; and this is undoubtedly one of the prerequisite conditions for a still further increase in the tempo of the economic development.

The very low level of the cultural heritage left by tsarism may best be described by the following figures. According to the

* This program has been exceeded. According to an Associated Press dispatch from Moscow, July 28, 1930, the number of children in primary schools has already reached 12 million. With the autumn of 1930, compulsory education will be enforced throughout the Soviet Union for children between the ages of 8 and 15.—*Ed.*

census of 1926 there were in the U.S.S.R. 50 per cent of literates among the population of 8 years old and over, while in the U.S.A. according to the census of 1920 there were 94 per cent of literates of the age of 10 and over. The same censuses show that, of the children between 5 and 11 years old, 55 per cent were receiving a school education in the U.S.S.R. as opposed to the United States' approximate 80 per cent. The percentages for children of 12 to 15 years old are 80 for the United States and only 10 for the U.S.S.R. No comment is necessary. It is quite obvious that a gigantic mobilization of the material and organizational resources of the country is necessary if the Soviet Union is to attain and surpass the advanced capitalist countries in the cultural field as well as the industrial. It has already been mentioned that the introduction of universal education is being accelerated beyond the original provisions of the Five-Year Plan. This is not enough, however. It is necessary to adopt urgent and effective methods for the liquidation of illiteracy among the adolescent and adult population of the country.

It would be unjust not to mention that during the short period of its existence, the Soviet Government has made substantial progress in the work of liquidating illiteracy. For, indeed, during the 24 years from 1897 to 1920, the percentage of literates among the male population increased from 33.7 to 44.6, while the percentage of literates among the female population increased from 11.7 to 25.8, whereas, during the six years from 1921 to 1927 the number of literates among the male population increased from 46.6 per cent to 58.2 per cent and the number of literates among the female population increased from 27.8 per cent to 34.4 per cent. Thus, even during the first initial stage of its development, when practically all the efforts and care of Soviet society were taken up by the liquidation of the economic disintegration and by the task of economic rehabilitation, the Soviet Government provided for a rate of liquidation of illiteracy such as was entirely unknown to pre-Soviet Russia. But however substantial this progress, it nevertheless remains a sad fact that there are still left 18 million illiterates among the people

of the age of 15 to 35, practically all of them coming from among the rural population. The liquidation of illiteracy among the people of this active working age is one of the most urgent problems, the solution of which cannot possibly be delayed. It is a *sine qua non* prerequisite for the successful accomplishment of the great and difficult tasks we are facing on the economic front.

The Five-Year Plan makes provision for the solution of the problem of illiteracy and arranges for the necessary organizational machinery and funds. The balance sheet of the Five-Year Plan contains an item of about 250 million rubles for this purpose. The control figures for the year 1929-1930 show that this task was not forgotten. The provisions of the Five-Year Plan are being put into effect. There is no doubt that they will be fully completed. The number of persons who will receive an elementary education in the schools for the liquidation of illiteracy will reach 7.5 million in 1929-1930, as compared with only 2.7 million in 1928-1929. The appropriation for this purpose was increased from 30 million rubles in 1928-1929 to 60 million rubles in 1929-1930, exclusive of the funds contributed by various social organizations, the total amount of which will not be less than the total state appropriation. Thus, the drive to liquidate illiteracy is conducted with great vigor and there is good reason to expect that the program of the Five-Year Plan for the liquidation of illiteracy among the 18 million people of the age of 15 to 35 will be carried out somewhat sooner than originally contemplated.*

In the field of development of the printed word, of books, journals and newspapers, the country faces no lighter task. Here too the Soviet Union substantially exceeded the level of pre-revolutionary times as early as 1923-1924, and in any case, in 1924-1925. The great development of social life in the Soviet Union demanded such a rapid growth of the printed word as was never known to tsarist Russia. The circulation of the 570 Soviet newspapers published in 1927-1928 was two and a half times

* According to the *Izvestia* for July 28, 1930, 13 million illiterate adults have been taught to read and write during the last two years.—Ed.

larger than the total newspaper circulation before the Imperialist War. In 1926-1927 there were published 253 million copies of various books as against only 119 million copies in 1913. But however greatly the development of the printed word may exceed the pre-revolutionary level, it is a mere beginning of that much greater development of the press and other publications which are literally as necessary for the Soviet Union as air. It must be remembered that during the first stages of economic reconstruction the publishing business faced great difficulties as a result of the backwardness of the paper and printing industries. The Soviet Government takes energetic measures to overcome these obstacles. It is enough to mention the splendid accomplishments in the construction of the Balakhnin paper combine near Nizhni-Novgorod, which immediately and substantially improved the situation in the paper market.

The program of the Five-Year Plan in the publishing business is based on the expectation that the publication of books will increase during the present period from 1.3 million printed signatures* to 2.6 billion signatures. It should be noted that among the books to be published, popular books, books devoted to technical and engineering sciences, and textbooks will increase at a more rapid rate than others. The publication of journals will be doubled during the period. From 540 million printed signatures in 1927-1928 it will increase to 960 million at the end of the present five-year period. The total number of copies of all the newspapers of the Soviet Union will increase from 1.7 billions in 1927-1928 to 3.5 billions at the end of the five-year period. The consumption of paper by newspapers will increase from 140,000 tons in 1927-1928 to 250,000 tons in 1932-1933.

We can easily appreciate that these computations of the Five-Year Plan with regard to the development of the publishing industry are extremely conditional. It is clear that the upper limit in this development is fixed not by the demand, but rather

* In the Soviet Union books are measured by signatures of 16 pages each.—*Ed.*

by the limitations of the printing and paper industries of the country. In case of a more successful development of the construction of printing and paper plants than is expected, or if conditions for the importation of paper and printing materials from abroad improve, it will become possible substantially to increase the program of the publishing industry. As to the needs of the publishing business itself, depending as they do on the demand for newspapers and books, they are literally unlimited at the present stage of development of the U.S.S.R. The control figures for 1929-1930 show that in all branches of the publishing industry greater progress is being made than contemplated by the Five-Year Plan. The circulation of books, magazines and newspapers is growing much more rapidly than provided for by the Plan. The intensity of the cultural demands of the great masses of the people is breaking through all barriers and makes for a much more liberal supply of publications, aiming to meet these most important and promising wants of the population.

Something should be said about motion pictures. This new development in the Soviet Union is making tremendous progress. In 1927-1928 there were only 3,500 moving picture houses in the U.S.S.R. The most modest computations of the Five-Year Plan contemplate about 35,000 by 1932-1933. This will enable them to accommodate great masses of the people and to play an important part in the efforts to raise the cultural level of the country. It must be remembered that even at this time about 60 per cent of all the films shown in the motion picture houses of the Soviet Union are prepared in Soviet studios, largely from materials supplied by the Soviet cinematographic industry. This condition guarantees that the insipid bourgeois melodrama and the American concoction of tricks will gradually be eliminated from the Soviet screen and will be replaced by highly artistic Soviet pictures, educational films, etc. The Soviet cinematograph must reflect the most important moments of the socialist construction and must at the same time make accessible to the masses of spectators a review of the cultural life in the broadest sense

of the term, and in the most popular form. Some Soviet films are at the present time enjoying great popularity in Western Europe. To this group belong, for instance, "Potemkin," "Genghis Khan," etc. In 1929-1930 the number of moving picture houses will already have reached 23,000. The tempo of actual development in this field considerably exceeds the provisions of the Five-Year Plan.

The peculiar nature of the tasks on the cultural front and the methods applied to their solution in the Soviet Union cannot be too strongly emphasized. In the first place, there is the great popular movement aiming to eliminate the remnants of the cultural backwardness and ignorance of the great masses of the people of the Soviet Union, enabling them to share in the cultural achievements of mankind. Numerous social organizations engaged in cultural work, such as the "Down with Illiteracy" and "Popular Mechanics" associations and the "All-Union Council for Physical Culture," not to speak of the cultural activities of organizations such as trade unions, Young Communists, co-operatives, etc., are conducting a regular cultural crusade in order to put an end, once and for all, to the heritage of backwardness, ignorance and "culturelessness." The multi-million mass of the population has been attracted to the work of cultural development, and in this lies the guarantee of the tempestuous rise of the cultural level of the country.

Finally, it is also necessary to consider the great cultural influence exerted by the Red Army. In all capitalist countries the army, which takes thousands of young men away from productive labor, is a weapon for subjecting them to the influence of a feudal and capitalist ideology, with the view of suppressing their critical thought and social inclinations. It is different with the Red Army. Even its enemies understand that the Red Army is a great revolutionary school which turns out of its ranks great numbers of people who have been educated into the spirit of socialism and into fighters for Communism. Even during the most difficult years of the Civil War, not a day passed during which the stay of the various parts of the Red Army in the cities

and villages was not used to develop an intensive campaign against illiteracy, religious prejudice, etc. Perhaps the best evidence of the cultural rôle of the army is furnished by the fact that in 1929 the Soviet Government charged the Red Army with the task of preparing, from among the privates subject to discharge, a substantial number of tractor drivers, mechanics and other highly skilled workers to meet the demands of the collectivized farms, not to speak of the fact that the discharged members of the Red Army are usually the candidates for chairmen of the local Soviets in the villages and in general fill the ranks of the leading active elements among the workers and peasants. It is impossible to overestimate the cultural influence of the Red Army.

Our discussion of the fundamental questions of cultural development has become somewhat too long. We are therefore compelled to pass in silence over many institutions and organizations devoted to scientific research work. A special investigation of the Central Statistical Bureau shows that on April 1, 1929, there were 1,250 scientific institutions in the U.S.S.R. with a total number of 20,000 scientific research workers. This cannot be treated briefly and deserves a special essay. We mention it merely to show that the scientific research front in the U.S.S.R. is extending with every passing year, making continuous and considerable progress. The reorganization of the All-Union Academy of Sciences, which recently solemnly celebrated its 200th anniversary, the net of scientific industrial research institutes such as the Central Aero-Hydrodynamic Institute, the Heat Treatment Institute, the Minerals Institute, the Sugar Institute, the Petroleum Institute, the special laboratories conducted by individual prominent scientists, such as the laboratories of the Academicians Pavlov, Ipatiev, and Yoffe, are merely the most outstanding organizations of scientific research work of the U.S.S.R. The numerous scientific works published in the country, the systematic participation of Soviet scientists in international scientific congresses furnish opportunities to follow the development of scientific thought in the U.S.S.R.

The Five-Year Plan is based on the expectation of further rapid development of scientific research work, including the substantial increase of the ranks of scientists and the extensive development of scientific intercourse with all the leading countries of the world. The Five-Year Plan provides the necessary reliable material prerequisites for this scientific work. The accelerated construction of many research institutes in all the fields of science and especially of institutes devoted to industry and agriculture, the various substantial appropriations for the development of academic institutions both on the lines of the All-Union Academy of Science and of the Communist Academy of Social Sciences, the liberal provision of state subsidies for the young generation of scientists, and the growing opportunities for sending students abroad, all have been carefully considered as phases of educational work in the Five-Year Plan; and the necessary appropriations are supplied by the annual operating budget.

There is no doubt that with every new year of development it will be necessary to revise the contemplated activities in the field of scientific research work and scientific knowledge in general with the view of extending the scale of the work and increasing the resources appropriated for that purpose. Socialist economics may be victorious only as scientifically organized economics. Because of this, as the Soviet Union gains in strength and extends the scale of socialist construction, it will have to put the work of scientific research on a soundly organized basis, supplying it with all the necessary funds. As a matter of fact it is already proceeding in this direction. But scientific research and scientific work in the U.S.S.R. cannot remain the privilege of the select few alone, as has been the case in every capitalist country. Cultural mastery over the bourgeoisie is one of the greatest and most difficult tasks of the communist revolution. As the Soviet Union develops its natural economy and is successful in its continuous advance against the remnants and atavisms of capitalism, it comes ever nearer to the accomplishment of this task.

CHAPTER XI

THE PROBLEM OF EQUILIBRIUM DURING THE PRESENT FIVE-YEAR PERIOD

IN the preceding chapters we have surveyed the essential facts not only of the production and construction tasks of the Five-Year Plan but also of the problems of equilibrium among the various branches of the national economy of the U.S.S.R. The questions of supply and demand with regard to power, fuel, metals, building materials, etc., were taken up in as much detail as possible. This chapter will be devoted to the consideration of only a few of the most important synthetic problems of the economic development of the U.S.S.R. during the present stage of its economic and social development. It is quite clear that questions of equilibrium among the various phases and elements of the economic plan, the method of balancing every branch of the national economy against all the other branches, the method of balance as applied to the investigation and computations of the perspectives of the immediate future, played an important part in the work on the drafting of the Five-Year Plan.

Two essential reservations should be made with regard to the methodology and the underlying political aspect of the question. From the methodological point of view it would naturally have been extremely important and interesting to draft the Five-Year Plan for economic development in the form of a carefully arranged provisional balance sheet of national economy, taking as the basis the sketches of extended reproduction as furnished by Marx. This thought is attracting the attention of many workers on the planning front of the U.S.S.R. Skilled statisticians, qualified research workers within the planning organizations and the representatives of the Communist Academy of

Social Sciences have already supplied many very interesting considerations and materials on the question of drawing up a balance sheet of the national economy of the U.S.S.R. and consequently on the question of the possibility of building up a provisional structure of economic equilibrium. However, this work is a pioneering enterprise which will demand the intense collective efforts of research workers and organizations for a considerable time before it can be made the basis of practical planning work. Every economist knows how vast and complex this task is.

For this reason, estimates of the Five-Year Plan as to equilibrium of supply and demand in the individual branches of the national economy, as well as the several attempts of the Five-Year Plan to estimate the synthetic equilibrium between the various branches of national economy, are intended to a large extent merely for the purposes of orientation and do not pretend to be either complete or accurate in every detail. The estimates, however, are accurate enough to serve as a basis for the practical planning work.

The second reservation is of a political nature. It is a fact that the very idea of economic equilibrium—balance among the various branches of the national economy—which is in itself quite important and legitimate for a system of socialist planning, is frequently used as a mere convenient screen for political rather than methodological attacks. It is an unchallengeable fact that the opponents of the rapid rate of industrialization, now being carried on in the U.S.S.R., are abusing in their arguments the ideas of economic equilibrium, the balancing of each branch of the national economy against the others, etc. When taken mechanically, deprived of the revolutionary dialectics which alone supply the key to the true understanding of the possible rate of development as well as the proportional shares of the various branches of the national economy in this development during the period of tempestuous socialist reconstruction, the naked formula of economic equilibrium not only fails to contribute anything to the treasure of planning ideas and methods, but becomes a reactionary obstacle interfering with revolutionary

planning. This is proven by the wreckage of many bourgeois economic schools during recent years of the economic developments of the U.S.S.R., such as the schools of Professor Kondratyev and his associates, Groman and his group, etc. But the most edifying example is supplied by the discussion which took place in 1929 with regard to the so-called "narrow spots" of the economic development. The question was raised in connection with the well-known "Notes of an Economist" by N. I. Bukharin. The guiding principle of all soviet organizations devoted to economic planning is not the abstract idea of economic equilibrium, but the active revolutionary idea of the socialist reconstruction of the entire system of the national economy.

With these reservations, we may pass to the consideration of the major synthetic problems of the Five-Year Plan.

1. THE SUPPLY AND DEMAND OF LABOR

In the course of the drafting of the Five-Year Plan an attempt was made to prepare a provisional balance sheet of the demand and supply of labor for the present period. It is quite clear that this is an extremely complicated task, fraught with exceptionally great difficulties; and that all such estimates are necessarily only approximations. Still, it is an extremely interesting piece of work, especially since it was carried out by the prominent statistician and expert in Soviet economics, S. J. Strumilin.

In the section devoted to the problem of labor it was pointed out how rapidly the population of the U.S.S.R. is increasing, at a rate quite unusual for Western Europe. The natural growth of the population of the U.S.S.R. is 3.5 times as great as the average for all of Western Europe. In other words, whereas the 370 million population of all the capitalist countries of Western Europe increases by 2.5 million annually, the 150 million population of the U.S.S.R. increases by 3.5 million people annually. If there should be added to this natural growth of the population the heritage of rural overpopulation left from pre-revolutionary Russia it becomes apparent how great the total supply of labor

for whom socially useful occupations will have to be found during the present five-year period is going to be. About 18 million people will be added as a result of the natural growth of population of the U.S.S.R. during the present five-year period, including 9 million people of the age of 16 to 59 years. Approximately another 8.9 million people will be added as a result of the so-called rural overpopulation. Thus, new jobs will have to be found for almost 19 million people during the present period. These millions will have to be organized and utilized in the realization of the Five-Year Plan.

This rapid growth of the population of the Soviet Union is in itself an important positive factor of socialist development. Still, it is clear that such a rapid natural growth of the population, taken together with the still unliquidated grave heritage of rural overpopulation and urban unemployment, raises many complex and difficult problems with regard to the rational utilization of the human labor and the rational satisfaction of the wants of the great labor commune. These difficulties are even greater because the Five-Year Plan is a plan for the initial stages of technical reconstruction, and it therefore must necessarily have as its task the rationalization of production and an increase in the productivity of labor. It is enough to speak of the intensive program for supplying the villages with machinery, which according to the most conservative estimates means a saving of human labor in agriculture of 2.5 million workers a year. It is enough to mention that the equipment of human labor with mechanical power will increase during the five-year period by 110 per cent in industry and 50 per cent in transportation, which again is bound substantially to increase the productivity of the workers in these fields.

Petty bourgeois ideologists and politicians are generally inclined to exaggerate the extent of the existing unemployment and the difficulties connected with it. In their objections to the accelerated tempo of industrial development and re-equipment of all branches of production with modern machinery they frequently base their arguments on the alleged impossibility of

solving the problem of the equilibrium between the supply of labor and the opportunities of its employment. However, every more or less careful observer of the economic development of the U.S.S.R. will easily find that the course of industrial centralization and mechanization of agriculture in the U.S.S.R. does not carry in its wake that inhuman ruin of small producers, peasants, artisans and kustars, so characteristic of the capitalist states. On the contrary, the industrial development and technical re-equipment of the country are accompanied by a process of liberal support of small producers, by the persistent organization of co-operatives of small producers, by uniting them and putting them on the road to modern large-scale production. In the Soviet social system there is no irreconcilable antagonism between the tasks of large-scale industrial development and the upbuilding of the collectivized sector of agriculture, on the one hand, and the interests of the small producers, on the other. Every attempt to slow down the tempo of large-scale industrial development must therefore be considered as extremely reactionary and anti-socialist. Any statement that such slowing down is necessary to provide greater opportunities for employment are fundamentally false and reactionary, both economically and socially, as any critical examination will easily show. They cannot, therefore, be given any consideration either in drafting or carrying to realization the plans for the development of the national economy of the U.S.S.R.

The dynamics of the supply of labor in agriculture appear, according to the estimates of the Five-Year Plan, to be as follows: The natural growth of the population will add approximately 14.4 million people to the rural population, including 7.6 million of working age. In terms of male labor power this addition to the rural working population will amount to 6.8 million full-fledged workers. On the other hand, taking into consideration the prospective intensification of agriculture, the number of people gainfully employed in rural settlements will increase by about 9.5 million. Accordingly the development of the demand for agricultural labor during the present five-year

period will take care, not only of the natural growth of the rural population but also will have the effect of substantially reducing the existing rural overpopulation, provided the planned reconstruction and changes in the field of agriculture are carried out. To this demand for labor should be added that of the cities, which according to estimates of the Five-Year Plan will provide employment for another 2.5 million people of the rural population. Taking both factors into consideration it may be expected that by the end of the five-year period the reserve of labor power in the villages will be reduced from 7.5 million to 2.5 million full-fledged workers.

These estimates are by no means too optimistic. It must be remembered that they were made on the basis of the rate of agricultural development fixed at the time of the ratification of the Five-Year Plan. Since that time the scale and pace of the collectivization of agriculture has undergone a substantial upward revision. The program for the production of the most important industrial crops, especially cotton, has been greatly increased. While according to the Five-Year Plan the production of cotton was to reach 48 million poods (864,000 tons) by the end of the five-year period, the latest decisions of the government provide for the production of 86 million poods (1.548 million tons) of cotton during that year. It must also be remembered that the experiences of 1928-1929 and 1929-1930 show a substantially higher rate of industrial growth, a much faster pace in the introduction of the seven-hour day and continuous work week, and the employment of a much larger number of new workers in industry than was originally contemplated by the Five-Year Plan. There is, therefore, every reason to believe that the provisional estimates of the Five-Year Plan of the changes in the demand and supply of labor are not at all over-optimistic.

The expected changes in the urban supply and demand of labor show a similar tendency. The total urban population, from 16 to 59 years old, will increase from 17.6 million in 1927-1928 to 21.6 million in 1932-1933. The percentage of hired labor in the total urban population gainfully employed will increase

from 38.7 at the beginning of the five-year period to 42.3 at its end. A substantial part of the total number will still consist of those engaged in household work. The reserve of unutilized labor power, that is, the number of unemployed, will be reduced from 1.1 million people at the beginning of the five-year period to 500,000 at its end. There is even less reason to consider the estimates of the Five-Year Plan with regard to urban labor as over-optimistic. When the Plan was drafted it was assumed that the absolute reduction of urban unemployment would begin in 1930-1931. But it is already quite obvious that during the present year of 1929-1930, the number of unemployed in the cities will not merely stop increasing but that it will actually be reduced by approximately 10 per cent. The causes for this reduction have already been considered in some detail in connection with the discussion of the growth of production and the organization of labor.

It is quite clear that these general estimates of the equilibrium of the supply and demand of labor to the perspective of the present five-year period are based upon the entire program of economic development, the most important elements of which have already been discussed. The program contains a number of special measures aiming at the rationalization of the employment of the great reserves of human labor in the U.S.S.R., including provision for such organizational tasks as establishment of a system of state and social institutions for the training of unemployed, and for the radical revision of the entire program of colonization with a view of eliminating individual migration and squatting and replacing it by transplanting entire groups of people in accordance with the plan for the collectivization of agricultural production and the settlement of new economic regions. The problem of the socialist organization of the reserves of human labor acquires greater importance with each passing year.

2. THE DYNAMICS AND STRUCTURE OF THE NATIONAL INCOME

Among the synthetic problems of the Five-Year Plan of economic development the questions as to the tempos of the development, formation and distribution of the national income in the U.S.S.R. are of the greatest interest. It is in this field that the advantages of planned socialist economics which have been freed of the non-productive squandering of the national income by parasitic social classes are especially apparent. This question deserves somewhat more detailed consideration.

The total national income—the total volume of the net output of agriculture and industry in the U.S.S.R.—amounted to 24.6 billion rubles in 1927-1928. The estimates of the Five-Year Plan lead to the conclusion that in 1932-1933 the national income will reach 43.2 billion rubles, or, eliminating the effect of price reductions, 50.2 billion rubles. In other words, during the present five-year period the national income will more than double in physical volume, while its nominal volume, expressed in monetary values, will increase by 75.3 per cent. It should be added that, notwithstanding the increase of the population, the per capita income will increase by about 80 per cent during the five-year period. These figures should be considered very carefully.

Of all the capitalist countries, the United States of America has had the greatest increase in the per capita income of the population during the last decade. For the ten years from 1890 to 1900 the national income of the U.S.A. increased 53 per cent, or on the average by 4.5 per cent annually. From 1900 to 1913 the per capita income of the United States of America increased by an average of 1.2 per cent a year. In Germany the average annual increase of the national income amounted to about 0.2 per cent during the period from 1896 to 1913. The annual per capita national income of England during the period from 1896 to 1913 showed no change, and in France it was even slightly reduced. These figures are taken from the statistics of the respective countries, as quoted in the book recently published

by the White Russian émigré Prokopovich, who is hardly inclined to paint too dark a picture of the capitalist Europe which gave him refuge.

It is of no slight significance that the national per capita income of the Soviet Union increased from 1924-1925 to 1927-1928 by 31 per cent, which amounts to an average annual increase of about 10 per cent. As can be seen from the figures quoted above, the European countries have known no such rate of growth of the national income during the past quarter of a century. Pre-revolutionary Russia, of course, could not record a single year in which the national income increased to any such extent. The expropriation of the parasitic social classes, the employment of the national income in a productive and purposeful way, the policy of socialist industrialization and cultural uplift of the masses are mainly responsible for this unprecedented rate of growth of the national income.

The experiences of the period just concluded and the projected development in all branches of production during the present five-year period show that the planned doubling of the national income, by physical volume, does not present anything fantastic under the conditions of the Soviet economic development. During 1928-1929, the first of the present five years, the national income, measured by physical volume, was increased by 15.8 per cent, that is, somewhat more than expected by the estimates of the Five-Year Plan. The control figures for 1929-1930 which take into consideration the new resources that are now available estimate that the physical volume of the national income will increase by 21.6 per cent during the year. This growth substantially exceeds the original estimates of the Five-Year Plan. This part of the Plan is thus not only realizable, but there are indications that it may be exceeded. We have no doubt that the rate of growth of the national income will appear to many western bourgeois economists as quite too absurd. Still, it is not based on mere theories, but it is an unchallengeable fact of the actual economic development of the U.S.S.R. The share of industrial production in the total national income has increased dur-

ing the first two years of the present period even more rapidly than originally estimated by the Five-Year Plan.

There is real significance in the changes in the distribution of the national income by the sources of its origin, which were made the basis of the Five-Year Plan and which have been carried out in practice. In 1927-1928 agriculture contributed 36.3 per cent, industry 32.7 per cent and construction 9.5 per cent of the total national income. By 1932-1933 the share of agriculture will be decreased to 27.7 per cent and the shares of industry and construction increased to 38.2 per cent and 11.8 per cent respectively. These shiftings in the productive structure of the national income are clearly reflected in the progress of the industrialization of the U.S.S.R.

No less interest is attached to the changes in the part played by the individual social sectors in the formation of the national income, that is, the growing importance of the socialized sector. In 1924-1925 the socialized sector contributed approximately 30 per cent to the total national income. By 1927-1928 the share of the socialized sector was increased to 53 per cent, and by the end of the five-year period it will reach to about 70 per cent. In other words, the Five-Year Plan is based upon the conception that by the end of its period, over two-thirds of the total wealth produced in the country will come from the socialized sector. To appreciate the extent of this achievement it should be remembered that we are dealing with a country in which the prevailing form of production consists of individual small farms and small-scale production in general; but the changes in the social structure of the national income depend entirely upon the changes taking place in its industrial structure, resulting from the increasing share of socialist industry and from the successful realization of the Leninist co-operative plan.

Of no less importance than the question of the sources of the national income is the question of the policy with regard to its distribution, the policy with regard to the purposeful employment of the country's national income. The two important aspects of this question are the distribution of the national income

among the social classes and the extent of the accumulation of capital and of capital investments in the U.S.S.R. In both these aspects, the Soviet distribution of the national income is radically different from that taking place in capitalist countries.

While the entire national income will increase during the five-year period by 75.3 per cent (in the prices of the respective years) the total income of the socialized sector (that is, the income from profits and rent received by state and co-operative organizations) will increase by 187.7 per cent. The total income of the population, after deducting the income of the state and co-operative organizations, will increase by 62 per cent; that is, at a somewhat lower rate than the total national income. But as the total income of the entire population increases by 62 per cent, the income of the proletariat will double, that is, the income of the proletariat will increase much more rapidly than the average. On the other hand, the income of the bourgeois layers of the population will not increase at all during this five-year period. The following figures will serve to illustrate our point in greater detail.

The income of the entire agricultural population will increase during the five-year period by about 50 per cent, consisting of an increase of 48 per cent in the income of the peasantry and an increase of 99 per cent in the income of the agricultural laborers. The total income of the urban population will increase by 76 per cent while that of the proletariat will increase by 105 per cent. In other words, the most rapid rate of the growth will be shown by the income of the socialized sector, or state and co-operative organizations; next will come the income of the urban and rural proletarian population, and then that of the peasantry and the other toiling elements of the population.

The real per capita income of the urban population will increase by 51 per cent and that of the rural population by 52 per cent. In other words, the Five-Year Plan is based on the expectation that the rate of increase of the real per capita income of the urban and rural population will be about equal. Naturally, in both urban and rural population the distribution

of the national income is such that the per capita income of the proletarian and semi-proletarian layers of the population will increase more rapidly than that of the other elements; and in the villages the per capita income of the collectivized peasantry will increase more rapidly than that of the individual peasantry. We have already had the opportunity to call attention to this fact in the chapter devoted to the problems of the worker-peasant bloc under the Five-Year Plan. Here the great significance of the changes in the distribution of the national income should be emphasized. For the first time the gap between the level of welfare of the city and the country is being bridged. Thus a foundation is laid for the elimination of the abyss between the standards of living in city and country created by the entire course of historical development. The complete solution of this problem is one of the most important and inspiring tasks of the great socialist development.

Quite naturally, the estimate of the annual rate of progress of all these projects is conditional. Changes which take place during the actual course of production, shifts in general conditions affecting distribution, the movement of prices and many other factors, may somewhat disarrange these carefully prepared estimates of this extremely complex process. The first year of the five-year period, 1928-1929, is quite characteristic from this point of view. Because of the shortage in agricultural products their price index was increased not by 5.5 per cent as estimated by the control figures of that year, but by almost 17 per cent. As a result the income of the peasantry increased during that year by 17.2 per cent, substantially more than estimated by the Plan, whereas the income of the proletariat increased by only 15.2 per cent and real wages only 3.4 per cent (as against an estimated increase of 5.2 per cent).

During 1928-1929 the holders of marketable grain who sabotaged the organized state collections of grain and engaged in grain speculation received about 300 to 400 million rubles of additional income above their share as estimated by the Five-Year Plan. The control figures for 1929-1930 accordingly aim

to correct this deviation from the course of the planned distribution of the national income. They provide for an increase of 16 per cent in the income of the proletariat and of only 7.6 per cent in the income of the peasantry. Such maneuvers, within the limits of one year or another, are inevitable in the solution of such a complex and difficult task as the planned distribution of the national income. It should be remembered that this process is taking place within the complex framework of contradictory social forces and in the midst of a sharp class struggle.

Of special interest and great importance is the question of the distribution of the national income between current consumption and accumulation or, in other words, the question of the rate of accumulation of capital in the Soviet Union. The summary estimates for the five-year period show a total national income of 175.2 billion rubles and a total amount of capital investments in all the branches of national economy of 74.2 billion rubles, while the total depreciation will amount to 20.7 billion rubles. In other words, the new accumulation added to the basic and working capital of the country will, according to the estimates of the Five-Year Plan, reach 53.5 billion rubles, or 30.5 per cent of the total national income. As to the individual sectors of the national economy the accumulation of capital will reach 42 per cent of the total national income in the socialized sector and 12 per cent in the private sector.

No doubt this is a very high rate of accumulation. Only the United States of America and Germany can boast of some similar rate of accumulation during the best times of their economic development. Such a high rate of capital accumulation is possible in the Soviet Union, first, because of the liquidation of the non-productive consumption of the parasitic social classes and, second, because of the organized planning of the economic life which permits not merely the mobilization of the entire income of the socialized sector for the needs of socialist construction but also the redistribution of the entire national income for the same purpose. It should be emphasized that the share of the private non-proletarian sectors in the socialist construction of the

U.S.S.R. will hardly exceed 10 per cent, while all the rest is mobilized within the socialized sector and the proletariat.

In order to illustrate the tension under which the socialist construction of the U.S.S.R. is proceeding it would be advisable to consider the estimates of the control figures for 1929-1930. In 1928-1929 the total amount of wealth devoted to the accumulation of capital funds in the socialized sectors reached 4.3 billion rubles. In 1929-1930 this amount is to reach 8.8 billion rubles. The total increase in national income during the year 1929-1930 is estimated to reach 4.5 to 5 billion rubles. Thus almost the entire increment of national income is to go to the accumulation of capital in the socialized sector. It is only on the basis of such an intensive accumulation that it becomes possible for the actual development of industry and socialized agriculture to attain a rate of growth exceeding the estimates of the Five-Year Plan. The building up of a socialist society in the midst of a hostile capitalist world demands exceptional efforts and the straining of all national resources.

The financial program of the Five-Year Plan must be considered in the light of these dynamics and structure of the national income. The total amount of capital necessary for the realization of the production and construction projects of the Five-Year Plan is estimated at 86 billion rubles. This includes budgetary resources, accumulation by economic enterprises, accumulation of funds by the social insurance and state insurance institutions, accumulation of share capital by co-operatives, credit institutions, etc. A careful analysis of all these sources of accumulations shows that the realization of the financial program will not meet with excessive difficulties provided the production plans are successfully carried out. The experience of the first two years of the Five-Year Plan confirms this analysis. In 1928-1929 the financial program was not only carried out, but exceeded the original estimates of the Five-Year Plan. The operating financial program for 1929-1930 provides for a total of 17.2 billion rubles as against the 11.5 billion rubles of 1928-1929, which again is considerably above the origi-

nal estimates of the Five-Year Plan. The State budget of 1929-1930 supplies a striking example. According to the estimates of the Five-Year Plan the total budgetary income of the state was to reach 9.1 billion rubles in 1929-1930, whereas the actual budget as ratified for this year provides for an income of 11.3 billion rubles or over 2 billions more than the original estimates.

Another question of great importance is that of the relation of the financial plan to the national income. In 1927-1928 the financial program of the entire country mobilized only 38 per cent of the total national income. It should be emphasized that by the financial plan is understood the aggregate of all financing operations, including the budget, the credit system, the accumulation of capital by economic organizations, the financial resources of social organization, etc. However, the financial program of 1929-1930 mobilized and redistributed for the purposes of socialist construction 50 per cent of the total national income, or 17.2 billion out of a total of 33.8 billion rubles. This shows the advantages of organized economic planning and the high tempo of accumulation of capital resources for the accomplishment of the tasks of the Five-Year Plan.

The Soviet system of finances is rapidly passing the period when it depended mainly upon the state budget. However important the part of the state budget may be, it is still only one of the elements of the financial system of the country and only one of the levers for the redistribution of the national income. It is significant that during the present five-year period the share of the budget in the general financial plan is reduced from 56.4 per cent in 1927-1928 to 53.4 per cent in 1932-1933, the share of the resources accumulated by economic organizations is increasing from 17.8 per cent to 22.1 per cent. As a result Soviet financial theory and practice devote ever greater attention to the problem of a general financial plan embracing all the links of the financial system of the country without any exception.

It is not necessary to consider at any length the question of the line to be followed, in accordance with the program of the

Five-Year Plan, in the utilization of these financial resources. Our entire discussion shows quite clearly for what purpose the material resources and organizational efforts of the Soviet State are mobilized. The leading and determining factors are the interests of economic development in general and, first of all, the interests of socialist industrialization. For in the summary totals of the financial program the part to be devoted to the financing of the national economy increases from 57.3 per cent of the total in 1927-1928 to 63.5 per cent in 1932-1933. The share of the expenditures for social and cultural purposes remains stationary at about 25 per cent of the total, while the share of national defense is reduced from 17.3 per cent to 11.6 per cent. Therein lies the strength of the economic system of the U.S.S.R.

The productive employment of the mobilized resources of the country enriches the entire course of its economic life and results in unprecedented rates of economic progress. These figures also supply conclusive refutation of the journalists of the Western European bourgeoisie who, with a zeal worthy of a better purpose, rant about the alleged Red militarism of the Soviet Union. The growth of the share of the total expenditures devoted to the financing of the national economy becomes even more impressive when the net budget is considered; that is, the budget from which the turnover items have been eliminated. In 1923-1924, 22 per cent of the total net budget was devoted to the financing of the national economy; in 1927-1928, 41.1 per cent. According to the Five-Year Plan 48.8 per cent will be devoted to this purpose in 1932-1933. In other words, about one-half of the total net budget by the end of the five-year period will be directed to channels devoted directly to the financing of the development of the national economy.

It is impossible to pass in silence over the question of the rate of exchange of the chervonets and of the changes in the purchasing power of the Soviet ruble. The Soviet Union depends on the results of the currency reform of 1924 and the Soviet ruble possesses a sufficiently stable rate of exchange. All talk

of a supposed deflation taking place in the Soviet Union is at best based on incompetent information unsubstantiated by the facts of the economic life of the U.S.S.R. The Five-Year Plan therefore does not contain and cannot contain any deflation tasks. In connection, however, with the general tasks of raising the real standard of living of the toiling masses and, above all, of the proletariat, the Soviet Government carefully watches the rate of exchange of the chervonets, safeguarding it against possible fluctuations; and providing for the increasing of the purchasing power of the ruble by 20 per cent during the five-year period. Thus the financial program of the Five-Year Plan not merely does not lead to inflation and the reduction of the purchasing power of money but, on the contrary, to the further stabilization of the currency of the U.S.S.R.

3. PROBLEMS OF CONSUMPTION

Consumption problems occupy an exceptionally great place in the economic development of the U.S.S.R. and in its entire system of social policy. For a socialist society it is quite natural that the entire program of production as well as the entire system of social policy should, in the final analysis, be subordinated to the interests of the greatest possible satisfaction of all the variegated wants of the great masses of the people. Capitalist society supplies only the upper bourgeois and feudal layers of the population with sufficient nourishment. But while these upper strata of the population are literally drowned in luxury, the great masses of the people are kept at or even below the line of bare existence. It was this kind of a heritage that was left to the Soviets from the times of tsarism, when only a very thin layer consisting of 3 to 5 million out of a total of 137 million people were well nourished and otherwise lived in decent or luxurious conditions. The working class of pre-revolutionary Russia and almost the entire poor and middle peasantry lived a life of semi-starvation, totally deprived of even the most elementary cultural necessities of life.

The October Revolution smashed the foundations and organization of the old pre-revolutionary Russia. It destroyed the pressure of feudal and capitalist exploitation that lay as a heavy yoke upon the shoulders of the many millions of all the peoples of the former Russian Empire. The broadest masses of the proletariat and the peasantry, the deepest layers of the toiling people who for many centuries had no share in the social life of the country, have now been drawn into the whirlpool of revolutionary events and started to take part in the administration of the machinery of the State. What great influence this has upon the growth of their wants and the expansion of the demand for consumers' goods can easily be appreciated. For, indeed, if these 150 million people increase their standard of living by only 20 rubles per capita a year, it means an increase of about 3 billion rubles in their purchasing power. It is one thing to furnish a very thin upper layer of society with every luxury. It is an entirely different thing to raise, however slightly, the standard of living and supply even the elementary cultural needs of huge masses of the population.

The Soviet Government was confronted with this great task under unusually difficult conditions. The production machinery of pre-revolutionary Russia was not and could not be prepared for this task. But even such as it was it had been greatly weakened, indeed, shattered during the years of the Imperialist War and the Civil War which engulfed the entire length and breadth of the Soviet Union, through the separation of the western industrial provinces, etc. At the beginning of the period of rehabilitation the industrial production of the Soviet Union had reached only 20 per cent and its agricultural production only 50 per cent of their pre-war volume. This created unusually great difficulties for the solution of the most responsible task of organizing the consumption of the country and increasing the welfare of the great masses of the people of the U.S.S.R. The difficulties were further aggravated by the fact that the natural growth of the population of the U.S.S.R., as

we have already repeatedly emphasized, substantially exceeds that of any other country of modern Europe.

It is worth while to consider at somewhat greater length the specific difficulties with which the solution of the consumption problem, both with regard to the consumption of farm products and industrial commodities, is connected. Having been reduced by the capitalist war and capitalist intervention to 50 per cent of its pre-war volume, agricultural production of the U.S.S.R. had to restore its productive apparatus on an entirely different social foundation and with a new political content. The great estates and upper capitalist layer of the country, which in pre-war times supplied a substantial part of the marketable farm products, were swept away once and for all by the October Revolution. The great agrarian revolution realized the centuries-long dream of the peasants and, by carrying through a redistribution of land, it reduced the number of landless peasants and peasants with very small holdings; increased the importance of the so-called middle peasantry which, however, measured by the size of its holdings and the level of its agricultural technique and methods, was really nothing more than small-scale primitive peasant farming. The consumption type of peasant farming, that is, the type of farm which itself consumes the greater part, if not all, of its products, and which is very little adapted to meet the increasing wants of a growing population, became the prevailing, almost the exclusive type of farming in the Soviet Union. This sort of farming is also most easily affected by unfavorable weather and adverse meteorological conditions.

Under these conditions, and confronted with the complex and difficult problems of providing the necessary food supplies for this vast country and renewing the grain exports, bourgeois economists and Right opportunistic elements within the working class and the Communist Party have employed all available means to make the country adopt the policy of encouraging production by the upper capitalist layer of the rural population—a policy, that is, leading to the development of the village along capitalist lines. Even within the ranks of the Communist

Party there were many to whom it appeared the only possible solution of the food supply problem, the only way to raise the productive capacity of agriculture. In a preceding chapter it was explained how the Communist Party and the Soviet Government answered these reactionary tendencies, tendencies that were reactionary not merely from a social but also from an economic point of view. The struggle against the insufficient productivity of the individual peasant farm is carried on in the Soviet Union by means of the collectivization of agricultural production and the socialist reconstruction of the village. But this deep and unprecedented transformation of agricultural production and village life in general is connected with gigantic difficulties and demands very great and continuous efforts for a considerable period of time. Because of this radical change in the development and in the very nature of the methods of production and social relationship in the Soviet village the food supply problem is connected with those partial and temporary difficulties with which we are confronted during the present period, but which will be solved by the Five-Year Plan.

Notwithstanding the very low consumption level of the great masses of the population of pre-war Russia, its manufacturing industries were still unable by themselves to supply the demands of the country for manufactured products. The policy of both the Triple Entente and Triple Alliance of European states was to force pre-war Russia into a position of an agrarian dependency of the powerful industrial countries of Europe. The productive machinery of the industries of the country was by no means prepared to meet the immensely increased wants of the great masses of the people freed by the October Revolution. Moreover, the capitalist intervention against the Soviets tore away from the U.S.S.R. several of its most highly developed industrial regions, such as Poland, Lithuania and Latvia, and formed buffer states out of them.

Just as in agriculture the Soviet economic policy had to solve the problem of taking care of the food supply of the country at the same time as it was occupied with the radical reconstruc-

tion of the technical methods and social ways of farming; so in industry it was necessary to provide the country with the required industrial commodities at the very time that the radical construction of the entire process of industrial production had to be carried out. The U.S.S.R. was also faced with the great problem of safeguarding its independence from the capitalist world. The country set out to build up its heavy industries. The industries producing consumers' goods have had to take second place as far as capital investments are concerned, in order that the industries producing means of production may be developed first. It is easy to appreciate the great difficulties thus created for the solution of the problem of supplying the market with the necessary commodities for the immediate consumer. Reference has already been made to the high rate of capital accumulation in the Soviet Union. As mentioned above, about 30 per cent of the total national income is devoted to the accumulation of basic and working capital. The striking example supplied by the year 1929-1930, when almost the whole increase in the national income over that of the preceding year will be used for the purpose of increasing the working capital of the socialized sector of the national economy and new capital investments, illustrates the tension under which the development of the U.S.S.R. is taking place and the exceptionally great difficulties which must be overcome in the solution of the problems of consumption.

In this connection it is finally necessary to call attention to the character of the foreign trade relations of the U.S.S.R. in the world market. The U.S.S.R. is compelled to export on a large scale in order to make possible the import of machinery, equipment, raw materials, semi-manufactured goods and the necessary technical aid from foreign countries. Without concealing it from the great masses of the people the U.S.S.R. is compelled to export, in addition to such products as petroleum, lumber and furs, such items as food supplies and partially manufactured goods (to the Orient), in order to provide for the import of machines and technical assistance to

the extent necessitated by the planned course and tempo of the socialist industrialization of the U.S.S.R. Only the White Guard émigré who has lost all touch with reality will denounce this policy as a violation of the interests of the great masses of the people. Only he will continue his senseless talk about the alleged mad export policy of the Soviet Union. The items for export are made up in the Soviet Union with the full support of the public opinion of the entire working class and peasantry and with their full co-operation. The entire country appreciates the responsibility involved and is conscious of the fact that at this stage of its historical development it is inevitable that consumption be somewhat contracted in order that the great socialist construction may proceed without interference and that the defense of the first Workers' and Peasants' Republic in the world, encircled as it is by hostile capitalist powers, may be strengthened.

The estimates of the Five-Year Plan with regard to the rate of increase in the providing of the necessary food supplies and consumers' goods must be considered in the light of the general situation outlined above. Only when the conditions which the Soviet Union is facing as a result of historical development are objectively and fairly considered, only when it is taken into consideration that it is under these conditions that the problems of mass consumption must be solved by the country during the initial stages of the period of reconstruction and development of the national economy, is it possible to appreciate the immensity of the positive tasks advanced by the Five-Year Plan and the real difficulties which are in the way of their accomplishment.

The estimates of the Five-Year Plan are based on the necessity not merely to increase the quantity of food consumption but also to substantially improve its quality. Accordingly, the Five-Year Plan provides for the stabilization of the standard of bread consumption in the cities and for only a slight increase in the standard in the villages. The food budget of the population of the Soviet Union contains too great a percentage of bread.

On the other hand, the consumption of other articles of food will substantially increase during the present five-year period. The per capita consumption of meat products is to increase from 49.1 kilograms in 1928-1929 to 62.7 kilograms in 1932-1933 in the cities, and in the villages from 22.6 kilograms to 26.4 kilograms. The normal consumption of eggs is scheduled to increase in the cities from 90.7 eggs at the beginning of the present period to 155 eggs at its end; and from 49.6 eggs to 72 eggs in the villages. Finally, the per capita consumption of dairy products is to increase from 218 kilograms in 1927-1928 to 339 kilograms in 1932-1933, for the city population; and from 183 kilograms to 228 kilograms, for the rural population.

The difficulties in the way of the solution of this problem appeared especially great during the first two years of the five-year period. The fact that the tempo of the development of agriculture lagged behind the rapid course of industrialization; the class resistance of the upper layer of kulaks to the socialist reconstruction, the unprecedented difficulties presented by the initial stages of the work of rebuilding the village on socialist foundations, and finally of unfavorable meteorological conditions during the last few years have aggravated the shortage of agricultural products.

The bourgeois press of Western Europe has conducted a noisy campaign about an alleged food supply crisis threatening the breakdown of the entire economic policy of the Soviet Union. Yet, to be sure, the more foresighted bourgeois journalists even now write about the surprising successes recorded on the Five-Year Plan front. Apparently they are aware of the fact that the partial difficulties with regard to the food supply are of a temporary and transitory nature. Indeed, no one in the Soviet Union doubts that the unfavorable conditions on the food supply front will be overcome in a comparatively short time since agriculture, now starting on the road toward collectivization, is developing greater strength and new resources. It is enough to point out that at the beginning of 1929-1930,

with only an average crop the Soviet Union already succeeded not merely in liquidating the shortage of grain which became acute during the preceding year, but also in putting away, after meeting all the demands of the consumers, substantial reserves for the future. The grain crisis about which the bourgeois press ranted so much during the last year and which put panicky fear in the hearts of the Right opportunist elements of the working class and the Communist Party, proved to be nothing more than a myth. All the predictions of the bourgeois press to the contrary, the Soviet Union did not have to import grain, but was able to meet all the current demand from its own resources and to build up a state grain reserve of about 2 million tons.

Under these difficult conditions, faced by the national economy, the advantages of a system of planned economics have become especially apparent. By their own experience the toiling people of the entire world know very well that in the case of any food shortage the upper layer of capitalist society, the bourgeoisie, never suffers privations. The entire burden of the difficulties falls upon the shoulders of the proletariat and the propertyless layers of the population. It is entirely different in the organized national economy of the Soviet Union; and the difference is in principle. In moments of maladjustment the proletarian character of the Soviet State and the system of planned economics uses all its strength and authority for the defense of the interests of the great masses of consumers and especially of the proletarian consumers. The very bread-cards which served as a pretext for the bourgeois press and for the Right opportunist elements within the Communist Party to raise the cry about an alleged return to the policy of so-called War Communism have nevertheless accomplished the task of bringing order into the food supply work and providing a sufficiently satisfactory solution of the food supply problem during the critical years of the development of Soviet agriculture. To be sure, the non-proletarian consumers, and to an even greater extent the non-toiling elements of Soviet society, were somewhat pinched as a result. But this could not in any way affect the socialist

construction in the U.S.S.R. There is no reason why the proletarian class line applied to the solution of the food supply problem during periods of temporary economic maladjustment should either be concealed or changed.

The estimates of the Five-Year Plan with regard to the consumption of manufactures are based on the assumption that the per capita consumption of cotton goods will increase from 15.5 meters at the beginning of the five-year period to 21.3 meters at its end; of woollens and worsteds from 0.48 meters to 1.7 meters; of boots and shoes from 0.4 pair to 0.74 pair; of rubbers from 0.29 to 0.39; of sugar from 7.7 kilograms to 13.9 kilograms and of soap from 0.94 kilograms to 2.6 kilograms. In other words, with regard to the most important consumers' goods the Five-Year Plan provides for the doubling or practical doubling of the per capita consumption.

The standards of consumption of finished manufactured goods as provided for by the Five-Year Plan naturally are still quite low; and the satisfaction of the fundamental cultural wants of the population is still at a rather low level. The historical conditions which make it impossible to solve this consumption problem more fully during the present stage of Soviet development have already been discussed above. The breakdown of capitalism in even one great industrial country of Western Europe, leading to the combination of the rich resources of raw materials of the Soviet Union with the great capacity for industrial production of a European Soviet republic and the diminution of the war dangers which such a combination implies, will naturally have the effect of accelerating the solution of the consumption problem at a much more rapid rate than is possible under conditions of the present isolated existence of the Soviet Union and its encirclement by a hostile capitalist world.

All modern capitalist countries suffer from overproduction. They are engaged in a continuous bitter struggle for markets. They are headed inevitably for another imperialist war for the redistribution of the globe, and for the reallotment of the colonies, spheres of influence, etc. In the Soviet Union, however,

as a result of the inability of the present industrial apparatus to meet the rapidly growing wants of the population, the economic difficulties arise, not from overproduction, but from underproduction. Hence the goods famine which has been the subject of serious consideration by Soviet economists during the last several years and which demands such strenuous efforts on the part of Soviet economic organization for its solution. According to the estimates of the Five-Year Plan the year 1930-1931 will already see a substantial reduction of the shortage of manufactured goods. The supply of manufactured goods will in that year reach the level of the effective demand for them. Under the same estimates of the Five-Year Plan the market will be substantially stabilized by the end of the five-year period. The rate of actual growth of industrial output which was discussed above and which exceeds the estimates of the Five-Year Plan furnishes good reason to believe that the task of relieving and then liquidating the shortage in manufactured goods will be fully accomplished.

4. ECONOMIC RELATIONS WITH FOREIGN COUNTRIES

For obvious reasons we are in a position to discuss here only the most important phases of the question of foreign economic relations. We cannot go into detailed statistics as we did in the discussion of the other economic problems. As projected by the Five-Year Plan the course of economic development of the Soviet Union is intended to make the country as independent of the capitalist world as possible, both with regard to industry and raw materials. The program of the industrialization of the country which is the crux of the Five-Year Plan is to accomplish this task.

This does not mean, however, that the Soviet Union intends to reduce its economic relation with foreign countries or its trade relations with the markets of the world. On the contrary, the Five-Year Plan is composed with a view to the extension of the foreign trade of the country by more than two and a half

times, provided, however, that in the final analysis the balance of the trade relations between the Soviet Union and the world market shall be of a nature as to contribute to the strengthening of the economic independence and national defense of the U.S.S.R. against the capitalist world. There is nothing contradictory about this policy. It is a result of and is dictated by all the conditions of the co-existence of the socialist and capitalist systems of economics and the great historical competition that is taking place between these two economic systems.

According to the Five-Year Plan the exports of the country will increase over two and a half times by 1932-1933. The major exports will consist of such products as petroleum, lumber, flax, and grains, which, according to the computations of the Five-Year Plan, will be exported in 1932-1933 to the extent of 8.8 million tons. However paradoxical the estimates for such extensive exports of grain within a very few years may appear in the light of the difficulties of the period of maladjustment in the food supply which was experienced by the Soviet Union in 1928-1929, it is still true that these computations with regard to the export of grain are by no means fantastic, nor are they even exaggerated. It has already been mentioned that the building up of large-scale mechanized agricultural enterprises is developing at an enormous rate of progress; and this is also true of the entire process of collectivization of agricultural production.

It should be emphasized that even in case the actual export of grain should fall short of the program it will by no means disrupt the export program as a whole. The last few years furnish incontrovertible proof of this. Without *any* exportation of grain the total exports of the Soviet Union have still continued to increase from year to year.

The program of industrial development which was considered above, clearly indicates the character of the prospective Soviet imports from capitalist countries. Industrial equipment, machinery for industry and agriculture, semi-manufactured goods, and, but in relatively diminishing quantities, raw materials, will

compose the major items determining the structure of the Soviet imports. It is only in this way, by extending the industrial equipment of the U.S.S.R., that it is possible to develop a really substantial exchange of goods between the Soviet Union and the capitalist world. The structure of the program of imports, the character of its orders placed in foreign countries, furnish convincing proof of the consistency and firmness with which the Soviet Government carries out its policy aiming to convert the U.S.S.R. from an agricultural into an industrial country, as well as the resolute struggle of the Soviet Government against any and every effort to hold back the U.S.S.R. to an agricultural or semi-agricultural attachment to the industrial countries of modern capitalism.

The question of credits must be considered in the light of the character of the imports. There is no case in international trade of large-scale cash purchases of machinery. It will therefore be quite natural if the Soviet Union in making up its extensive program for the purchase of equipment and machinery in capitalist countries should have based its purchase plan upon the extension of long term credits by the countries where these orders will be placed. However, taking into consideration the conditions of international politics, the Five-Year Plan relies in its computations almost exclusively upon the internal resources of the country. The Five-Year Plan is based on the assumption that the planned tempo of industrialization is possible of realization even under the exigencies which would arise if there were no substantial increase in the volume or improvement in the terms of foreign credits. The past decade has shown that even without foreign credits and notwithstanding the direct opposition of capitalist countries, the economic development of the U.S.S.R. is making sufficiently rapid and lasting progress. There is no doubt that in the future, in the course of the socialist reconstruction of its entire economic system, the U.S.S.R. will find within its own borders the resources necessary to maintain the high tempo of economic development.

It can hardly be doubted, however, that their own interests as well as the clash of interests among them, will force individual capitalist countries and groupings to extend to the Soviet Union larger credits, on better terms, than previously, for the realization of its great program of industrial development. Capital investments in Soviet industries are too promising and safe not to be inviting. The agreement with the Ford Company for the construction of a great automobile plant in Nizhni-Novgorod and the large imports of Ford cars into the U.S.S.R., the placing of orders for the equipment of the Dnieprostroy and the industrial combine on the Dnieper River, the agreements with various foreign firms providing for construction of several electric stations, their participation in the construction of tractor plants, metallurgical and chemical enterprises, etc., all go to show that the logic of economic relationships is breaking through the policy of isolation and economic blockade.

There are great perspectives for the development of foreign technical assistance during the present five-year period. The work of Colonel Cooper in the capacity of a consultant in the construction of the Dnieprostroy, the technical assistance of the Ford Company in the erection of the automobile plant, the engineering work of numerous foreign specialists in the various planning organizations of the Soviet Union, etc., bear witness to the growing participation of foreign engineers and experts in the industrial development of the U.S.S.R. Suffice it to say, to show the great proportions assumed by foreign technical assistance and the great perspectives it opens for the best engineers and technical experts of the leading capitalist countries, that in 1929-1930 the payments for foreign technical aid reached into tens of millions in rubles. The Soviet Union is prepared to appropriate great sums to pay for the scientific and technical consultation of first class world-wide engineering firms, as well as of individual scientists and experts. It may be expected, however, that the perspectives of the great construction taking place in the U.S.S.R. will prove to be sufficiently attractive for the most enlightened and advanced minds in the ranks of the tech-

nical intelligentsia of the capitalist world to enlist them not merely as temporary consultants, but as permanent co-workers.

In concluding this perhaps too general consideration of the problems of economic equilibrium and balance of payment of the Five-Year Plan it should be emphasized that these estimates do not pretend to be either final or faultless. On the contrary, the computations of the Five-Year Plan with regard to equilibrium within the individual branches of the national economy are subject to repeated and most careful revision and correction in the annual control figures for each succeeding year. This checking up is carried out on the basis of the additional economic data and the new economic experience accumulated during the preceding year. Only by means of such a combination of the general estimates of the Five-Year Plan with the more concrete and carefully weighted control figures (weighed on the scales of the complex relationships of real life) are we in a position to make our computations entirely dependable. Let it be said right here that the check of the estimates of the Five-Year Plan, made with regard to economic equilibrium, and from the experience of 1928-1929, as well as the control figures for 1929-1930, show conclusively that the Five-Year Plan has allowed rather too great a margin of safety. In any case, both the final balances of 1928-1929 and the control figures for 1929-1930 make it certain that every individual branch of the national economy, and the national economy as a whole, will reach a substantially higher level than contemplated by the Five-Year Plan.

CHAPTER XII

THE INTERREGIONAL DIVISION OF LABOR IN THE LIGHT OF THE NATIONAL POLICY OF COMMUNISM

THE discussion of economic perspectives and of the most important problems of the economic development of the U.S.S.R. would not be complete without a presentation, even in most general terms, of the question of the interregional division of labor in the light of the national policy of communism. The arch-imperialist Russification character of the economic policy of tsarism is too well known to demand any further consideration. Not in vain was the former Russian Empire looked upon by the representatives of the oppressed nationalities as "the prison of peoples." It was not by mere accident that regions, very rich in economic resources, but populated by those peoples that were contemptuously designated in the language of tsarism as "foreign races," came to the October Revolution in a condition of extreme economic and cultural backwardness. The imperialist policy of the tsarist feudal lords and capitalists did not permit the economic development, much less the industrial development, of the border lands populated by national minorities. Maintaining its power by means of unheard-of exploitation and enslavement of the conquered peoples, enforced by a policy of blood and iron, the Russian Empire was not in the least prepared to allow the development of industry in those regions, since such development implied the creation of a growing national proletariat able to head the national revolutionary movement for emancipation.

It would be a mistake to think that the Russification policy was followed only by the most reactionary circles of monarchistic Russia. On the contrary, the Russian bourgeois liberalism which was represented in its time by the expressedly imperi-

alist and Russification policy of the Constitutional-Democrats (Cadets) fought bitterly with every so-called centrifugal tendency of the numerous national regions of the former Russian Empire. They madly defended the imperialist nature of the economic policy of the autocracy. This was especially apparent after the February Revolution and during the period of the Provisional Government. At that time the tone of the politics of the country was given by these very Cadets and bourgeois parties of very similar nature, headed by leaders of the type of Milyukov, Guchkov, Kerensky and others. Until the very present the Soviet Government has had to struggle against the remnants of the imperialist and Russification tendencies of the officialdom and bourgeois society: these tendencies seriously interfere with the accomplishment of the economic tasks of the U.S.S.R.

The problem of a new distribution of the country into economic regions therefore has had an exceptionally great importance from the very start of Soviet economic development. The problem became even more urgent during the drafting of the Five-Year Plan. The old economic geography of tsarist Russia had to give way to the new tendency of interregional distribution of labor as demanded by the very structure of the Soviet State. It must be emphasized that this problem is connected with immense and unusually complex difficulties. It is impossible to approach the question from any one point of view. The exclusively economic criterion will not suffice. The problem of dividing the country into economic regions consists mainly in the difficulty of finding the optimum combination of what is economically advisable and what is demanded by the national policy, and by the considerations of national defense. Only by means of such a synthesis, by means of the optimum combination of these three factors will it be possible to arrive at a correct solution of the problem of interregional division of labor, the difficulty of which is increased because it must be accomplished within the complex surroundings of the initial stage of the social-

ist reconstruction of the economic system of the U.S.S.R. and under conditions of encirclement by an hostile capitalist world.

1. ECONOMIC REGIONS OF THE U.S.S.R.

The problem of subdividing the U.S.S.R. into economic regions on a scientific basis, and with a view to the tasks of the socialist reconstruction, was raised quite early. Soon after the approval of the famous electrification plan, maps of the U.S.S.R. showing the so-called Gosplan regions (regions arranged in accordance with the general plans of the State Planning Commission) were published, and immediately acquired considerable popularity. This was the first attempt to subdivide the country into economic regions. It played a great part in popularizing this idea and was later substantially carried out by the administrative division of the country into political economic regions. That original plan served as a basis for the formation of such regions as the Ural, Siberia, North Caucasus, the Central Industrial region, the region of the Lower and Middle Volga, etc. The old tsarist provinces and counties became a thing of the past. They were established on the basis of feudal and bureaucratic considerations and were entirely out of accord with the tasks and interests of any regional division based on scientific and economic considerations. Only by the formation of such great territorial divisions as Siberia, the Far East, the Ural, the North Caucasus, etc., endowed with wide administrative power and with substantial political and economic authority, was the U.S.S.R. able to bring the regional division of the country into harmony with the Soviet economic policy and with the development of a socialist system of economics.

The entire program of subdividing the U.S.S.R. into economic regions is based on the same conception with regard to power development as that which is at the foundation of all the plans with regard to the development of the national economy. The selection of regions and districts possessing the greatest advantages with regard to the quantitative and qualitative combina-

tion of power resources, and offering the greatest opportunity for the most effective utilization, was one of the greatest and most responsible tasks of the scientific economics and business practice in the U.S.S.R. The entire scheme of the economic territorial divisions of the Gosplan is arranged with the view of forming such regions as will insure the greatest possible utilization of the natural and economic resources of each region as well as of the resources of human labor. Actual experience has shown that the computations embodied in the mentioned regional divisions were correct.

But the territorial division of the Gosplan could not be carried out fully in its purely theoretical form. In many districts it was necessary to make substantial modifications in order to bring the original plan into harmony with general political and constitutional considerations and with the interests of national minorities. The fate of this plan may serve as an excellent illustration of the flexibility of the Soviet economic policy and its ability to harmonize with the national policy of communism and give the most careful consideration to the interests of the national development of those regions which were formerly so backward and so oppressed.

By way of illustration let us consider how the plans of dividing the country into economic regions were harmonized with the political demands for the formation of national autonomous states in such regions as the Ukraine, the Transcaucasian Federation and the Central Asiatic Republic. The Ukraine, if it were to be considered from a purely abstract economic point of view, should have been divided into two or three economic regions: the southern mining region consisting of the Donetz Basin, Krivoy Rog, the steppe agricultural region including the steppes around the Black Sea, and the northwestern region of intensive agriculture, having its center in the city of Kiev. However, the formation of such separate regions would have been contrary to the interests of the Ukraine as a whole, as a national republic. Because of this consideration the Ukraine has been formed into a single economic region embracing a great territory

with richly developed agricultural and manufacturing industries and with a population of over 30 millions. The Transcaucasian Federation, with all its subdivisions, has been built up as a federation of national republics and regions with authority to carry out within its territorial limits all plans of economic development. The interests of the national minorities in Central Asia led to the formation there in 1924 of several autonomous national republics such as the Turkmenistan, the Uzbekistan, the Tajikistan and others, each of which is in charge of its own economic developments but co-ordinates its work with regard to such great economic projects, affecting the interests of the entire central Asiatic region, as the irrigation projects, etc. For this purpose they are all united into the Central Asiatic Economic Council.

Moreover, within each Soviet republic of the U.S.S.R. there have been formed self-governing autonomous republics, national territories and territorial subdivisions known as *Rayons* * for the national minorities. To this group belongs the German republic on the Volga, the Bashkir autonomous republic, the Kirghiz autonomous republic, the Tartar autonomous republic, the Kazan autonomous republic, the Crimean autonomous republic, the Moldavian autonomous republic, the regions of Abkhazia, the Adjara, and many others. The economic territorial subdivisions in this case are brought into harmony with the national policies of communism.

It is impossible to overestimate the great significance of the economic regions and national territorial subdivisions for the realization of the general tasks of the economic development of the U.S.S.R. It would be impossible to develop the economic forces of such a vast country as the U.S.S.R. or to carry into realization the correct division of labor among the various regions of the country if the development of the regional economic self-consciousness of the people were neglected, and if the most important regions failed to realize their own power and their place in the general socialist national economy of the country.

* Districts, or territorial divisions, midway between a province and a county.—*Ed.*

A great deal has been written about the economics of the individual regions and republics of the Soviet Union and their efforts to draft plans for their own perspective development. This literature supplies valuable and interesting material throwing light upon the economic potentialities of each economic region as well as upon the regional self-consciousness of their respective populations.

The very structure of the Five-Year Plan is, to a certain degree, a result of the rivalry and conflicting claims among the individual economic regions and with the central authorities of the Soviet Union; and emphasizing the economic advantages of each of these regions, discussing the tempo of their economic development, the scale of their capital investments, or in other words, the distribution of the national income of the U.S.S.R. This development of the economic self-consciousness of the individual economic regions, this competition between them and this endless discussion by them with the central authorities does not present any centrifugal tendencies. Neither does it contain anything that threatens the economic unity of the Soviet Union or the central supervision and guidance of its economic development. The socialist character of the Soviet economic development leading to the formation of uniform economic and social aims, and unflinching class solidarity in the face of a hostile capitalist world, supply safe guarantees against any separatist tendencies which might otherwise develop in individual regions as a result of any bourgeois and petty-bourgeois influences among the population.

All economic planning in the U.S.S.R. reduces itself to a peculiar synthesis of the vertical analysis of the entire Soviet Union by such branches of the national economy as industry, agriculture, and transportation, and the horizontal regional analysis of the individual economic regions and national republics. This method of considering every substantial fact of economic life and every great economic enterprise from these two angles is exceptionally fruitful, and supplies assurance that all the economic possibilities of the country will be taken into

consideration and the best ways and means for the optimum development of the country will be selected.

These general remarks must be kept in mind when considering the specialization of the economic regions as contemplated by the Five-Year Plan. It should be noted that the more definite specialization of the economic regions of the U.S.S.R. will take place only in time and will demand for its crystallization a substantially longer period of time than five years. In its more perfect form this specialization of the regions is an integral part of the general plan of socialist development of the U.S.S.R. The present Five-Year Plan provides only for the first steps in the direction of that redistribution of productive forces among the various regions, which is starting the U.S.S.R. on the road to economic reconstruction.

The former industrial districts, the Moscow district and the Leningrad district, entered the Five-Year Plan of socialist development with the substantial capital of a developed industry, qualified workers and accumulated industrial experience. Their weak spot, as has already been repeatedly mentioned, is their lack of a dependable power base and their dependence on coal from the far-off Donetz Basin, as well as the great distance which separates them from their sources of raw materials. As a result of this situation and of the rapid industrial development taking place in the regions which are more favorably situated with regard to sources of energy and raw materials, the importance of the Leningrad and Moscow districts in the industry of the country will be somewhat reduced as time goes on.

The Five-Year Plan is arranged on the basis of the specialization of these regions in highly advanced and labor consuming industries for the production of consumers' as well as producers' goods. The Moscow and Leningrad regions are charged with great tasks in the production of general machinery and transportation equipment and in the electro-technical and chemical industries. The radical reconstruction of the old giants of Russian industry, such as the Putilov and Sormovo plants, which will demand great capital investments and which will in many

cases amount to the actual rebuilding of these plants, the establishment of powerful chemical combines in the district of Bobrikov near Moscow and in Leningrad, all supply an idea of the scale of the industrial development taking place in these regions.

Different tendencies are shown by the development of light industry in these regions. In the future the textile industry of the Soviet Union will not be concentrated exclusively in the Moscow and Leningrad districts. On the contrary, the construction of great textile mills has already been started and partly completed in the regions producing the necessary raw materials, that is, in Central Asia and Transcaucasia. The cotton goods industry is brought into the cotton-producing belt. This is done out of economic considerations as well as with a view to the industrialization and economic development of the national republics of Central Asia and Transcaucasia. Several districts with substantial surpluses of agricultural population, such as the central black soil region, with its center in the city of Voronezh, also have a claim upon some branches of the light industries. As a result of all these conditions the Five-Year Plan provides for some reduction of the share of the Leningrad and Moscow districts in the total production of the textile industry and of light industry, generally during the present five-year period.

In order to create a power base for the further industrial development of these regions and mitigate their dependence upon coal from the Donetz Basin, as well as to make possible the development of the chemical industry in these regions, it will be necessary to turn sharply to the utilization of the local fuels such as peat, coal from the deposits near Moscow and water-power in the Leningrad region. The scale and tempo of this development as well as the concrete construction projects in these fields have been discussed in a preceding chapter.

The Ukraine supplies an edifying example of the redistribution of the productive forces and the specialization of economic regions. The mining region of the Ukraine, the Donetz and Krivoy Rog Basins, are charged with productive and construc-

tive tasks demanding the highest strain and tempo. Reference has already been made to the program of coal mining, metalliferous ore mining, ore and pig iron production, and the developments of the chemical industry in the Donetz Basin. This region will continue to dominate the production of solid mineral fuel and steel and iron. At the same time the chemical industry will be built up in this region on a large scale.

The characteristic feature, however, of the policy of inter-regional division of labor is the substantial development in the Ukraine of the metal working industry and the production of high priced finished manufactured goods. The radical reconstruction of the Kramatorsk plant and its conversion into a great enterprise for the production of heavy machinery; the radical reconstruction of the Lugansk locomotive works and their conversion into the major base for the production of locomotives in the U.S.S.R. during the present five-year period; the rapid development of the electro-technical and tractor industries in Kharkov; the development of agricultural implement production in many plants in Kharkov, Zaporozhye, Kiev and Odessa, mark the direction of the reconstruction of the existing plants of the Ukraine with a view of establishing there a large scale machine building industry. But perhaps the most important development in the Ukraine is the establishment of the powerful industrial combine on the Dnieper River, which will receive its power supply from the Dniestrostroy hydro-electric station. This combine will consist of a number of new metallurgical plants for the production of ferro-alloys, aluminum and high grade steel. It will also include some chemical enterprises. There are also being established tractor works with a total capacity of 58,000 tractors each year, a machine tool plant, etc. Under these conditions the Central Industrial and Leningrad regions will lose their monopolistic position in the production of complex machinery and chemicals.

It is not necessary to discuss at any length the distribution of agricultural production and industries depending upon farm supplies for their raw materials. Under the Five-Year Plan

the experiment of introducing the methods of intensive agriculture in the northern part of the Ukraine and the concentration of the production of beets in this region as the basis for the sugar industry of the U.S.S.R. will be continued. There will also be developed in this region on a larger scale than heretofore the animal products industry: packing houses, canneries, etc. The production of grain in the southern sections of the Ukraine is being reorganized on the basis of the mechanization of agricultural production and the development of great grain raising enterprises. It is here that the first machine and tractor station, the Shevchenko,* was established. The experience of this station contributed to the development of the constructive idea which at present plays so great a part in the technical and social reconstruction of agriculture. From the point of view of the division of labor among the various regions it should be observed that the grain produced by the Ukraine, especially in its southern steppes bordering on the Black Sea, will be used primarily for export. The task of the Ukraine, then, is less to produce grain for the internal market than for export.

The Ural region is one of the oldest industrial regions in the U.S.S.R. Like the Donetsk-Krivoy Rog region it has been charged with great tasks for the development of the metallurgical and chemical industries. But in addition it will also develop, on a large scale, the wood distillation industry, the smelting of non-ferrous metal and the production of mineral fertilizers, partly based on the Solikamsk deposits of phosphates. Petroleum was not discovered in the Ural region until after the adoption of the Five-Year Plan. But for this region, too, the really characteristic feature of the new development is the construction of metal working and machine building plants. The Sverdlovsk plant for heavy machinery, the Chelyabinsk tractor works, the machine tool plants, etc., mark the course of the rapid industrialization of the Ural, as provided by the Five-Year Plan. The share of the Ural as well as that of the Donetsk-Krivoy Rog basin in the total production of machinery in the country will

* Named after the famous Ukrainian poet.—*Ed.*

increase during this five-year period at the expense of the Moscow and Leningrad regions.

Perhaps the underlying regional conception of the Five-Year Plan finds its most characteristic expression in the high tempo of industrial development of the eastern regions. Whereas the fixed capital of industry will increase during the present period by 189 per cent for the Soviet Union as a whole, by 90 per cent for the central Industrial region and by 111 per cent for the Leningrad region, the capital funds of industry will increase during the same period in the Ural by 600 per cent, in Siberia by 620 per cent and in the Far East by 630 per cent. To be sure, the increases in the eastern regions are naturally greater because the development is started from a very low base. Still, it is rather a characteristic tendency and not a mere accidental development.

In this connection it is important to emphasize the establishment of industrial centers in Siberia. While at this time a mere start has been made in that direction there is no doubt that in the near future it will develop on a very large scale and will become of great importance to the country as a whole. Consider the industrial development of the Kuznetz Basin, with its immense deposits of coal, the largest in the U.S.S.R. The development of the coal mining industry, the establishment of a greater Kuznetz metallurgical plant, the construction of two electrical power plants and the development of non-ferrous metal smelting will put the Kuznetz Basin among the most important industrial regions of the country. The linking of this region with the great Trans-Siberian Trunk Line, on one side and with the Turkestan-Siberian Railway on the other, provide the necessary prerequisites of transportation facilities for the continued rapid development of this industrial center. In addition it must not be forgotten that the mighty Siberian rivers present endless opportunities for the construction of hydro-electric power plants with millions of horse-power capacity. It so happens, moreover, that the spots where such developments may be made are situated very conveniently to industrial developments.

From the viewpoint of the principles and methods applied to the regional subdivision of the country, the development of the North Caucasian region with the city of Rostov as its center, is extremely interesting. It is generally known that this part of the country, populated by the Cossacks and the mountaineers of the northern slopes of the Caucasian Mountains, was at one time a Russian Vendee, a base for the White Guard partisan armies. It was without industrial enterprises, excepting only the comparatively small factories and mills at Rostov and the railway shops of the North Caucasian Railway. By attaching the eastern section of the Donetz Basin to this region a new element, consisting of substantial industrial groups and a developed proletariat, was introduced into it. What is even more important, however, is the amazingly few years it took this region to become a place of great industrial and electrical development, already showing a tremendous growth of large-scale, mechanized agriculture.

The entire character of this region has been radically changed both in its economic and social structure. The transformation was accomplished by the construction of the powerful combine of agricultural machinery in Rostov, the erection of the six central electric power plants with an aggregate capacity of 200,000 kilowatts referred to above, the development of the chemical industry supplied by hydro-electric energy and the establishment of such nests of mechanized agriculture as the great "Giant" State farm, the model experimental State farm, etc. As a result, the former region of the kulaks and reactionary Cossacks was rapidly converted into a highly developed industrial region in which even agriculture has been largely industrialized. This is a striking example of a really optimum combination of the power and other resources in a region. It also supplies a convincing illustration of the methods by which the very roots of capitalism are extirpated from the economic system of the Soviet Union.

The subtropical regions of Transcaucasia and Central Asia supply another interesting example. Not so long ago, these

regions supplied only raw materials for the Russian textile industry and such exotic products as wine and grapes, for the bourgeois society of the Russian Empire. The Five-Year Plan charged these regions with the very important task of extending their cotton production to a degree which would insure the raising of 48 million poods (26 million tons) by the end of the five-year period, so that the country may be made independent of imported American cotton. All the great development projects in these regions, such as the extensive irrigation works, the construction of transportation lines, the reforms in the system of landholding, the collectivization of labor in the cotton raising sections, the preparation of skilled workers, are directed toward the accomplishment of this great and important task. The other tasks assigned to this region, such as the development of silk and woolen cultures, the extension of the tea plantations, and the raising of cattle on a larger scale, are only secondary and supplementary to this major task.

But the characteristic feature of Soviet economic policy is in the fact that it does not limit itself to the development of these regions as a mere extended base for the production of subtropical raw materials, however natural and economically sound such a policy may appear. Side by side with the development of subtropical cultures, the Soviet policy also insists on industrialization. Already a number of large hydro-electric power plants have been built in Soviet Transcaucasia, thus providing a power base for industrial development. The Semo-Avchalsk hydro-electric plan near Tiflis has been operating for several years. The Rion hydro-electric plant near Kutais will soon be completed, and will supply the means for electrifying the railway crossing at the summit of Suram. The chain of electric plants in Armenia, the Dzorogad-Alaberdi-Erivan-Leninakan, etc., create the conditions prerequisite to the industrial development of this republic, bordering on Turkey. The energetic exploitation of the manganese mines in the district of Abkhasia, the sinking of shafts in the Tkvarcheli coal fields near Sukhum, the construction of tea packing houses and the de-

velopment of tea plantations in the district of Batum, the construction of a textile mill in Leninakan, Armenia, the development of non-ferrous metal smelting in Transcaucasia, not to speak of the rapid development of the petroleum industry, are important milestones along the road to the industrial development of the Transcaucasia which, until the time of the revolution, was a typical semi-colonial dependency of Russian tsarism.

Even more striking is the development of the Central Asiatic republic of the Soviet Union. Central Asia, Turkestan, formed the most backward and oppressed borderland of the old Russian Empire. The colonization policy of tsarism here assumed its most outrageous forms and the exploitation of the region, so rich in raw materials, was indeed merciless. But the Five-Year Plan, in this region, devotes its attention not only to the development of raw materials and cotton, but also to the further extension of the general economic development and industrialization which started here immediately after the defeat of the capitalist intervention. A number of textile mills have been constructed in the very heart of this cotton raising region; plants have been built for the construction of cotton cleaning machines; a great combine for the production of chemical fertilizers has been established; the development of the Central Asiatic coal deposits has been started; metallurgical plants for non-ferrous metals and electric power plants are under construction. Finally, there is the great development of transportation facilities. This last not only makes it possible for the Central Asiatic republics to carry out their great task of cotton production on a large scale, but also puts them on the road to general large-scale industrial development.

So much for the general line of the interregional division of labor and interregional distribution of its productive forces in the Soviet Union, characteristic of its general economic policy. It is quite obvious that this is a complex process involving many serious difficulties. It is by no means an easy task to discover the optimum combination of economic efficiency and usefulness which must dictate the national policy, including considerations

of a military and strategic nature. This task demands the most serious scientific research and the most skillful political guidance for its successful accomplishment.

2. ECONOMIC REGIONS AND THE NATIONAL POLICY OF THE U.S.S.R.

The great attention devoted by Leninism to the national problems of the proletarian revolution is generally known. The entire problem is considered by Leninism in a genuinely revolutionary manner. As against the wretched opportunistic national program of the Second International, Leninism developed a really effective revolutionary program for its solution. In the first place, Leninism extends the question of national minorities beyond the limits of the so-called cultural nations, which alone were given consideration by the Second International. Leninism considers the national problem to be of world-wide extent and links it directly to the question of colonies. Leninism also extends the principle of national self-determination to include the right of independent statehood, *i.e.*, self-determination even to the extent of separation from the mother country. The national problem is organically combined with the proletarian revolution, and the destruction of imperialism. All these principles of the revolutionary conception of Leninism with regard to the national question are embodied in the political structure and the economic program of the U.S.S.R.

As early as 1921, the X Congress of the Russian Communist Party emphasized this phase of the national problem. The congress declared:

The actual elimination of national inequalities is connected with the destruction of the economic inequalities as they develop in the course of history. This economic inequality found its expression first of all in the fact that the borderlands of Russia were put in a position of semi-colonial possessions and were maintained by force only to supply various raw materials for the manufacturing industries of the "Center."

The XII Congress of the Russian Communist Party in 1923 again took up this question and adopted the following resolution:

National equality before the law, assured by the October Revolution, constitutes a great victory for the people. But it does not by itself solve the national problem. A number of republics and regions which have not passed—or which have passed only to a very slight extent through the stage of capitalism, which have no proletariat of their own or whose proletariat is in an early stage of development, which are backward economically and culturally, are not in a position to utilize fully the rights and obligations extended to them by the legal national equality. And they will not be in a position to raise themselves to a higher state of development and thus catch up with the more advanced nationalities, without effective and prolonged assistance from without. The cause of this inequality lies not merely in the history of these peoples but also in the policy of tsarism and the Russian bourgeoisie who tried to convert the borderlands into regions devoted exclusively to the raising of raw materials, so that they might serve as a base for exploitation by the central industrial regions. It would be impossible to put a complete end to this inequality and to liquidate this heritage root and branch, in a year or two . . . still it is necessary to eliminate it. It may be eliminated, however, only by means of actual and prolonged assistance from the Russian proletariat to the backward peoples of the Soviet Union with a view to promoting their economic and cultural development. This assistance must find its expression first of all in the adoption of practical measures for the development of industrial centers in the republics formed by the nationalities that were formerly oppressed. For this work the local population must be enlisted to the greatest possible extent.

The correct combination of the tasks of a rational division of the country into economic regions with the tasks of the national policy is of such immense importance for the socialist development of the U.S.S.R. that this question was taken up again by the XV Congress of the All-Union Communist Party in 1927. This congress adopted resolutions with regard to the drafting of the Five-Year Plan. Its decision on the national question contains this provision :

The Five-Year Plan must devote special attention to questions concerning the raising of the economic and cultural positions of the borderland and backward regions, fully recognizing the necessity to liquidate their economic and cultural backwardness. The Plan must accordingly provide for an increasing tempo of economic and cultural development, not losing sight, however, of the connection between the needs and wants of these regions and those of the Soviet Union as a whole.

This close connection between the needs and wants of the Union as a whole and the interests of the highest possible tempo of development of the backward and formerly oppressed regions which passes like a red line through the entire structure of the interregional division of labor during the present period.

Some statistics will illustrate how this conception is reflected in the Five-Year Plan, as well as in the actual course of economic development. At the beginning of 1928-29, 65 per cent of the total capital of industry was concentrated in three large industrial regions of the Soviet Union: Leningrad, the Central Industrial region, and the Ukraine. The Five-Year Plan, however, is so constructed that the share of these three regions in the total capital of the country will be reduced to about 55 per cent in this period, distributed as follows: the share of the Leningrad region will be reduced from 10 to 7.3 per cent; that of the Central Industrial region, from 31 to 21 per cent; and that of the Ukraine will be increased from 24.5 per cent to 26.2 per cent. In other words, the industrial capital of these three old and big industrial regions will lose out proportionately in favor of the younger economic regions which are passing through the initial stages of their industrialization. But even within the three old regions there is a shifting in favor of the Ukraine. While the share of the Moscow and Leningrad regions in the total industrial capital of the country is to be reduced substantially, the share of the Ukraine is to be increased.

But the highest tempo of development will be reached by the industries of the young sections of the country and especially by the eastern regions. The Ural region will increase its share in the industrial capital of the country from 4.3 per cent at the beginning of the five-year period to 10.4 at its end, while the average growth of the industrial capital of the entire Union will reach 189 per cent during the five-year period, the industrial capital of Transcaucasia will increase by 202 per cent, of the Ukraine by 208 per cent; of the Central Black Soil region, 302 per cent; of White Russia, 342 per cent; of the Lower Volga region, 388 per cent; of the Central Asiatic region, 394 per cent;

of Kazakstan, 449 per cent; of the Northern region, 555 per cent; of the Ural, 600 per cent; of Siberia, 720 per cent, and of the Far Eastern region, 730 per cent. These figures bear testimony of the great development of the productive forces and the great tempo of industrialization provided by the Five-Year Plan for the economic regions that were so backward and so oppressed under the tsarism.

It is also worth while to compare the amount of capital invested in state industry in the several economic regions at the beginning of the present five-year period with the capital investments which are to be made in the industries of these regions, in accordance with the Five-Year Plan. The basic capital of the Central Industrial region amounted in 1928 to about 2.1 billion rubles; during the present five-year period 2.8 billion rubles are to be invested in the state industry of this region. But the capital investments assigned to the state industry of the Ukraine will amount to 4.2 billion rubles, while at the beginning of this period its total capital funds in state industry amounted to only 1.7 billion rubles. The sum of 260 million rubles is to be invested in White Russia, whereas its initial basic capital amounted to only 70 million rubles. The figures for the Middle Volga region are 187 million rubles of investment as against 68 million of initial capital; for the Lower Volga region, 470 million rubles of investment as against 110 million rubles of initial capital; for the Central Black Soil region, 420 million rubles as against 122 million rubles; for the Central Asiatic region, 471 million rubles as against 104 million rubles; for Kazakstan, 340 million rubles as against 67 million rubles; for the Ural, 1.9 billion rubles as against 300 million rubles; for Siberia, 610 million rubles as against 90 million rubles, etc. In other words, capital investments in industry in all the backward regions are made on a scale which exceeds by many times the existing basic capital. Only in this way will it be possible to raise the economic and cultural level of the backward regions on the scale demanded by the decisions and instructions of the Party Congresses and the Soviet government of the U.S.S.R.

This distribution of the capital investment in industry is naturally reflected in the growth of the industrial production in the various regions. The tempo of industrial development of the various economic regions and national republics of the U.S.S.R. shows the effect of the indicated structure and dynamics of the capital investments. The distribution of transportation construction is equally characteristic. The length of the railways for the entire U.S.S.R. will increase by about 18 per cent during the five-year period, but in the Central Industrial region it will increase by only 4.5 per cent. It will increase in Central Asia by 24 per cent; in Transcaucasia, by 41 per cent; in Kazakstan, by 70 per cent; and in the Ural region by 27 per cent. In the development of transportation we see a typical Soviet shift in the distribution of the productive forces, and the same policy with regard to the development of the regions and peoples that were so backward and oppressed under capitalism. These principles have been made the basis of the entire Five-Year Plan.

Attention must also be called to the fact that this interregional distribution of labor, which results in the most effective economic and social developments of the Socialist reconstruction of the U.S.S.R., extends not only to the great economic regions and the great national republics but also to the smaller national formations. The so-called autonomous national territories within the republics of the Union, the still smaller national districts (*rayons*) are given the same careful consideration and attention in the actual course of economic construction. The economic development of such republics as the Moldavian, the Tartar, Karelian, the Mariysk region, etc., is carried out in accordance with the general lines of the economic and national policy of communism.

The national policy of the Soviet Government has had its echo on the international political arena and especially in the national revolutionary movements of the colonial East. In fact, it has become an important world-wide revolutionary factor. On the other hand, the national policy of the Soviet Government is continually attacked by the émigré bourgeois groups of the

Ukraine, Transcaucasia and Central Asia, who were defeated in their attempts toward a bourgeois solution of the national problem. The sorry knights of the wretched attempts to form quasi-independent bourgeois republics, in reality chained to the chariot of imperialism, in the Ukraine and Georgia, are now knocking at the door of the European bourgeois and the Second International with their lamentations of alleged national oppression in the U.S.S.R.

The real course of economic development in the U.S.S.R. and the Five-Year Plan, supply abundant and convincing evidence that only the Soviet régime and Soviet national policy guarantee the real national emancipation, the real economic and cultural development, of the peoples who were formerly oppressed. It is especially significant from this point of view, that the All-Union Congress of Soviets, formed of the representatives of all the republics, regions and national territories of the Soviet Union, approved the Five-Year Plan and its program of interregional distribution of labor with singular unanimity. This was a genuine triumph for the Soviet national policy, which is being carried out in the course of the development of a socialist system of economics.

CHAPTER XIII

WHITHER U.S.S.R.?

WE are at the end of our review. The major lines, the guiding principles and the most important details of the Plan for the socialist development of the Soviets, have already been sufficiently clarified: it is not necessary to repeat them here.

Only this question still remains: Whither the U.S.S.R.?

What kind of a social order is being created by that rising tide of revolutionary enthusiasm which, though it has engaged the energies of the millions of people in the Soviet Union, can have been only faintly suggested here? What answer is given by actual development under the Five-Year Plan to the historical question raised by Lenin at the beginning of the New Economic Policy: "Which will be victorious in the economic and social development of the U.S.S.R.—socialism or capitalism?"

It seems to us that the actual development during the twelve years that have passed since the October Revolution and the nearly two under the Five-Year Plan supply a perfectly clear and convincing answer. *The economic construction and the social development of the Soviet Union are making rapid and decisive steps toward socialism.* The Five-Year Plan is being carried forward with the greatest enthusiasm both as a basis for great projects and as a program for the accelerated and victorious socialist offensive against the remnants of capitalism in all branches of the economic, social, political and cultural life of the U.S.S.R.

The development of the productive forces of the Soviet Union is passing the milestones set by the Plan more rapidly than was ever contemplated in the most optimistic estimates. Our analysis of the results achieved in 1928-1929 show this, as do the control figures for all branches of Soviet economic and cultural develop-

ment and social and political life for 1929-1930. Especially significant is the fact that the tempo contemplated by the Five-Year Plan for the socialist reconstruction and industrialization of agriculture has been greatly exceeded, accelerating the reconstruction and development of the village on socialist foundations. Only a little while ago the All-Union Communist Party and the Soviet Government were still considering two alternative drafts of the Five-Year Plan, the "basic," drawn up with a view to the most unfavorable conditions and another, the so-called "optimum," which provided for a higher tempo of development. Now there is no more talk of the minimum or "basic" variant of the Plan. The actual course of development has entirely eliminated it: *it has converted even the "optimum" draft into a mere minimum program.* Reality has surpassed the most daring estimates. Ever more frequently and persistently resounds the slogan—"The Five-Year Plan must be carried out in four years!"

We have repeatedly emphasized the fact that any plan for the economic development of the U.S.S.R. must, in its entire structure, answer the question of interrelation between the various social sectors. In other words, it must make clear what guarantee

Share of the Socialized Sector (State and Co-operative) in the Total National Economy of the U.S.S.R., in percentages:

	1927-28	1932-33
Number of persons working for hire.....	80	84
Basic capital	53	69
Capital investments	58	84
Production, total	46*	67*
Of this:		
(a) Agriculture	2*	15*
(b) Industry, all, incl. small-scale....	80	92
Retail trade	75	91
National income	53	67

* By the time of publication of this book these figures had already been surpassed. This is especially true of the collectivization of agriculture. In June, 1930, before the completion of the second year under the Plan, the entire five-year program for agricultural collectivization, as shown in this table, was finished. The country has now set itself to the task of complete collectivization of agriculture and the elimination of the kulak element from the village.—*Ed.*

it gives of the strengthened leadership of the socialized sectors—of the socialist forms of the economic system. We have reviewed the actual course of construction and the perspectives of development of all the branches of Soviet economics from this viewpoint. In the most general form these processes of socialization, as projected by the Five-Year Plan, are presented in the preceding table.

However, *the real process of socialization proceeds much more rapidly than contemplated in the Five-Year Plan.* Already in 1929-1930, 85 per cent of all persons working for hire are employed in the socialized sector, which is producing 88.2 per cent of the entire output of industry and accounting for 59 per cent of the entire basic capital and 76 per cent of all the capital investments during the year. But the process of socialization is especially accelerated in the field of agriculture—that is, on that very sector of the economic front where the last decisive battle with the remnants of capitalism is being fought. The Five-Year Plan contemplated bringing the sowed area of the socialist sector up to 27 million hectares by 1932-1933 but in reality we already have 20 million hectares in 1929-1930.* The Five-Year Plan was based on the estimate that by 1932-1933, about 43 per cent of the grain available for market would come from the socialized sectors, whereas already by the end of 1929-1930 the socialized sector will supply over 50 per cent of all the marketable grain stocks. The great masses of the peasantry, not merely the poorest but also the middle, have begun a determined advance, under the guidance of the Communist Party, on the road toward agricultural socialization. This has become a mass movement, extending not only to individual holdings but to entire villages, districts, even regions. This is the crucial fact of the present social and political life of the U.S.S.R. It furnishes a conclusive answer to the question of the fate of the socialist development in the great republic of labor.

* These expectations have been surpassed. The total area sown in collective and state farms actually reached 42.2 million hectares in August, 1930, or 33.0 per cent of the total sown area.—*Ed.*

There is no disputing the fact that the unprecedented tempo of economic development of the U.S.S.R. during the past few years, and the splendid successes in the accomplishment of the Five-Year Plan are really a result of this socialist character of Soviet construction. *The collective socialist forms of national economy open unheard-of vistas for the development of the productive forces and the creative ardor of the greatest masses of the population.* This is something unknown to capitalism. The entire Five-Year Plan is built upon the unprecedented opportunities presented by the collective socialist forms of the economic system. Here lies the world-wide historical significance of the development which is taking place in the U.S.S.R., and which with every passing year and every new stage of progress, becomes an increasingly important factor in the international proletarian revolution.

The capitalist elements within the U.S.S.R. and the international bourgeoisie with its Social-Democratic prophets never tire of prophesying that the U.S.S.R. will slide back to capitalism. The economic development of the U.S.S.R. during the past period, the expressed socialist character of the Five-Year Plan, the determined socialist offensive, the daring extirpation of the roots of capitalism in the U.S.S.R., the splendid progress made in the accomplishment of the Five-Year Plan, gave smashing blows to the hopes and illusions of the bourgeoisie. *Instead of a return to capitalism, there is a tempestuous tide of socialism rising in the U.S.S.R.* The leading elements of international capitalism have now come to understand it. This explains the increased hostility and aggressiveness against the Soviet Union and the feverish preparations that are being made for a new capitalist "holy crusade" against the country of rising socialism.

For some years the Trotskyites degenerated to the position of the counter-revolutionary Social-Democracy, have kept up their "Left" attacks on the economic policy of the U.S.S.R., claiming that there is a Thermidor taking place in the U.S.S.R. In the struggle against Trotskyism, the socialist construction of the U.S.S.R. is carried on to victory. In the midst of the struggle

against Trotskyism the great Five-Year Plan of immense socialist projects was prepared and is being carried into execution. *Not a Thermidor but a mighty development of October is taking place in the U.S.S.R.* The anti-Soviet, counter-revolutionary nature of Trotskyism has been mercilessly exposed. The leader of this group has passed into the camp of the capitalist enemies of the Soviet Union, but the overwhelming mass of the Trotskyists have capitulated before the unchallengeable fact of the victorious socialist development.

The Right opportunistic element (the Bukharin group) made its appearance during this difficult and critical period in the development of the U.S.S.R. which took place during the initial stage of the reconstruction period, at the moment when the capitalist elements mobilized all their forces for the bitterest resistance to the work of socialist construction by the All-Union Communist Party. These Right opportunist elements considered that the contemplated tempo of socialist industrialization went beyond the resources of the Soviet Union. They failed to understand the program of the socialist reconstruction of the village. They charted their course by the private sector in agriculture. They were afraid to start a quarrel with the kulak. In the final analysis they were trying to force the All-Union Communist Party to reduce the tempo of socialist industrialization and make it follow a course leading to the capitalist development of the village; *i.e.*, a course of capitulation to the capitalist elements of the country. The Right opportunist elements prophesied that the contemplated tempo of socialist industrialization and socialist reconstruction in the village would break up the alliance between the workers and the peasants, alienate the working class from the peasantry and undermine the foundations of the proletarian dictatorship.

The program of socialist reconstruction in the U.S.S.R. is carried out in the midst of struggle against the Right opportunist elements. And it is in this same struggle that the Five-Year Plan has been drawn up and is being successfully carried into execu-

tion; that the victorious socialist offensive against the remnants of capitalism has been developed; and that the extirpation of the very roots of capitalism is taking place. The actual course of development has exposed the capitulating character of the Right opportunist deviation and smashed its prophecies. If any danger threatened the worker-peasant bloc of the U.S.S.R. it came not from the economic policy adopted by the All-Union Communist Party, but from the system of economic misconceptions of Right Wing opportunists. What is taking place as the Five-Year Plan is accomplished is not the weakening of the worker-peasant bloc—the alliance between the proletarian masses and the masses of poor and middle peasantry—but its further strengthening. In fact, it is moving into a higher stage, based on the socialist reconstruction of agriculture and the entire mode of village life—a reconstruction which is carried to realization on the foundation of the successful industrialization of the country and the strengthening of the class position and leadership of the proletariat. In the face of the unchallenged facts of the successful socialist construction, the Right opportunist opposition has been broken up and its leaders have capitulated. (See the declaration signed by Rykov, Bukharin and Tomsky in November, 1929.)

The U.S.S.R. has long since become the recognized socialist fatherland of the revolutionary proletariat of the entire world and of the hundreds of millions of oppressed peoples in the colonies. To be for or against the U.S.S.R. signifies, so far as the revolutionary movement of the international proletariat is concerned, to be for or against the proletarian revolution, for or against the interests of the working class. It is on this line that the division of political forces in the international political arena is taking place. Proletarian organizations in every nook and corner of the world control the course of socialist development and socialist construction in the U.S.S.R. Here lies the immense significance of the numerous labor delegations continually visiting the Soviet Union, who so carefully and with such zeal study the actual course of this socialist development. Socialist construc-

tion in the U.S.S.R. is taking place under the ceaseless control and continually growing sympathies of the international proletariat.

The Five-Year Plan and the program of socialist development have been submitted to the judgment of the public opinion of the international proletariat for more than one year now. During this time news of the Plan has reached the farthest corner of the world and attracted the greatest attention in literally all its parts. It has opened new vistas and hopes for the foreign friends of the U.S.S.R. Its explicitly socialist program was a blow to the capitalist world. Unlike capitalism, torn by its endless contradictions and now in its decline, there arises on the boundless territory of the Soviet Union a new socialist régime created by the forces of a people 150 million strong.

The leaders of the modern bourgeoisie are worried over the fate of post-war capitalism, and they write a great deal about it. It is enough to mention the lively discussion in the German press at the end of 1928, raised by the report of Professor Schmollenbach at the Vienna Congress of representatives of scientific societies and the report of Werner Sombart at the general meeting of the Social Science Association at Zurich. Both of these reports are filled with a spirit of deep pessimism, not to say with the decrepitude of senility. It is the twilight of capitalism. This is no longer only the scientific prognosis of the international revolutionary proletariat raised on the great teachings of Marx and Lenin: the same realization is beginning to dawn upon the advanced minds of the modern European bourgeoisie.

Werner Sombart, venerable prophet of capitalism, concluded his report with this statement:

The domination of capitalism is nearing its end. A new economic system is arising. Capitalism is the most remarkable creation of the human spirit. It is the greatest wonder in the history of mankind, a miracle which we never understand fully. We are merely amazed at its colossal forms and the splendor of its technique. This capitalism has now entered the age of a man in his forties, the age when he is still in the possession of great strength and all his abilities but when he

is nevertheless no longer in a position to conceal his stolidity and the fact that he is becoming increasingly quiet and moderate.*

We may grant Sombart the privilege of old people to profess to be younger than they really are—which also belongs, apparently, to declining social institutions. It is also unnecessary to debate with him the grandeur of capitalism. It cannot be denied that his entire report sounds like a solemn obituary on capitalism.

It is quite characteristic that Christian Eckert, who discussed Sombart's report before this assembly of bourgeois scientists, was compelled to indulge in a dissertation which attempted to prove that the capitalist economic system may still continue to exist and expand.

The pre-capitalistic economic systems (he said) cannot harm capitalism even in those places where they still prevail. The post-capitalistic economic systems (!) may grow in significance, but apparently a great deal of time must pass before they will be in a position seriously to affect capitalism and the major branches of its activity.

It is quite instructive to find this important acknowledgment of the inevitability of the development of "post capitalistic economic system" coming from the lips of a bourgeois savant. His last hope is that the end will come very slowly.

It is indeed of the greatest significance that the tried representatives of the European bourgeoisie are beginning to feel the approach of the twilight of capitalism. One of the opponents of Sombart, Alfred Weber, had to divide the economic system of the world into three sectors, the pre-capitalistic, the capitalistic and the anti-capitalistic. Said Weber:

What relationship is there between these three spheres? We are in a state of mutual struggle in the widest sense of the word. We are the immediate opponents of the anti-capitalist sphere [that is, apparently, of the U.S.S.R.] . . . This anti-capitalist sphere has lately attempted to exert an anti-capitalist influence on the pre-capitalist sphere [apparently he was speaking of the Chinese revolution] and it is my

* Werner Sombart, "Die künftige wirtschaftliche Entwicklung Westeuropas," *Neue Freie Presse*, Vienna, September 27, 1928.

opinion that here lies one of the fateful questions as to the future of capitalism.*

As correctly noted by the editor of the Russian edition of this interesting discussion, Alfred Weber, in his division of the world economic system into three spheres, speaks "about the yesterday, the present day and the to-morrow of the history of the world. An economic régime different in principle from the capitalist system has already been created," he says. "To-morrow is knocking at the gates of capitalism, which is making feverish efforts to strengthen its position." No reformist theorist of "organized capitalism" can delay the victorious course of the international proletarian revolution and the socialist order that is arising with it.

The Five-Year Plan of the U.S.S.R., that program of great projects, and the developed socialist offensive are striking decisive blows at the foundations of international capitalism. The question: "Whither the U.S.S.R.?" may be answered in the words of Comrade Stalin in the conclusion of his characterization of the first year of the five-year period, which is justly designated by him as "the year of the great transformation." He says:

We are going full steam ahead through industrialization toward socialism, leaving behind the age-old Russian backwardness. We are becoming a land of metals, of automobiles and tractors; and when we put the U.S.S.R. into a motor-car and the muzhik upon a tractor then let the revered capitalists who pride themselves on their "civilization" try to catch up with us. It is still to be seen which country will then have to be considered backward and which advanced.

These words reflect the proud revolutionary self-consciousness of the peasants and workers of the Soviet Union 150 million strong, who have been freed by the October Revolution from the yoke of capitalism, who have started out on the great road of socialist construction, and who see all oppressed humanity preparing and rising toward its own October. The mighty socialist ship "Soviet Union" is cutting the waves of the capitalist elements on its way toward the World's October.

* *Verhandlungen des Vereins für Sozialpolitik in Zürich*, 1928, published by Dr. Fr. Böse, Duncker and Humbolt.

APPENDIX

TABLE OF WEIGHTS, MEASURES AND CURRENCY

The metric system is gradually being introduced into the Soviet Union.

One kilogram is equal to 2.204 pounds.

One pood is equal to 36 pounds.

One kilometer is equal to 3,280 feet, about two-thirds of a mile.

One verst is equal to two-thirds of a mile.

One dessyatina is equal to 2.7 acres.

One hectare is equal to 10,000 square meters, or 2.471 acres.

One gold ruble has the value of \$0.51.

One chervonetz is equal to 10 gold rubles; its gold parity is \$5.146.



DISTRICT ELECTRIC POWER PLANTS

Map of the power plants at the end of the Five-Year Plan (October 1933), showing also the power plants in operation in 1930, those in the process of being enlarged and those under construction, see pp. 70-80.
—(U.S.S.R., in Construction, No. 3, 1930.)

p. 63-64. cf. Power survey of America by the
technocrats.

How equate animal & steam power to
~~kilowatts~~ : kilo-watts.

